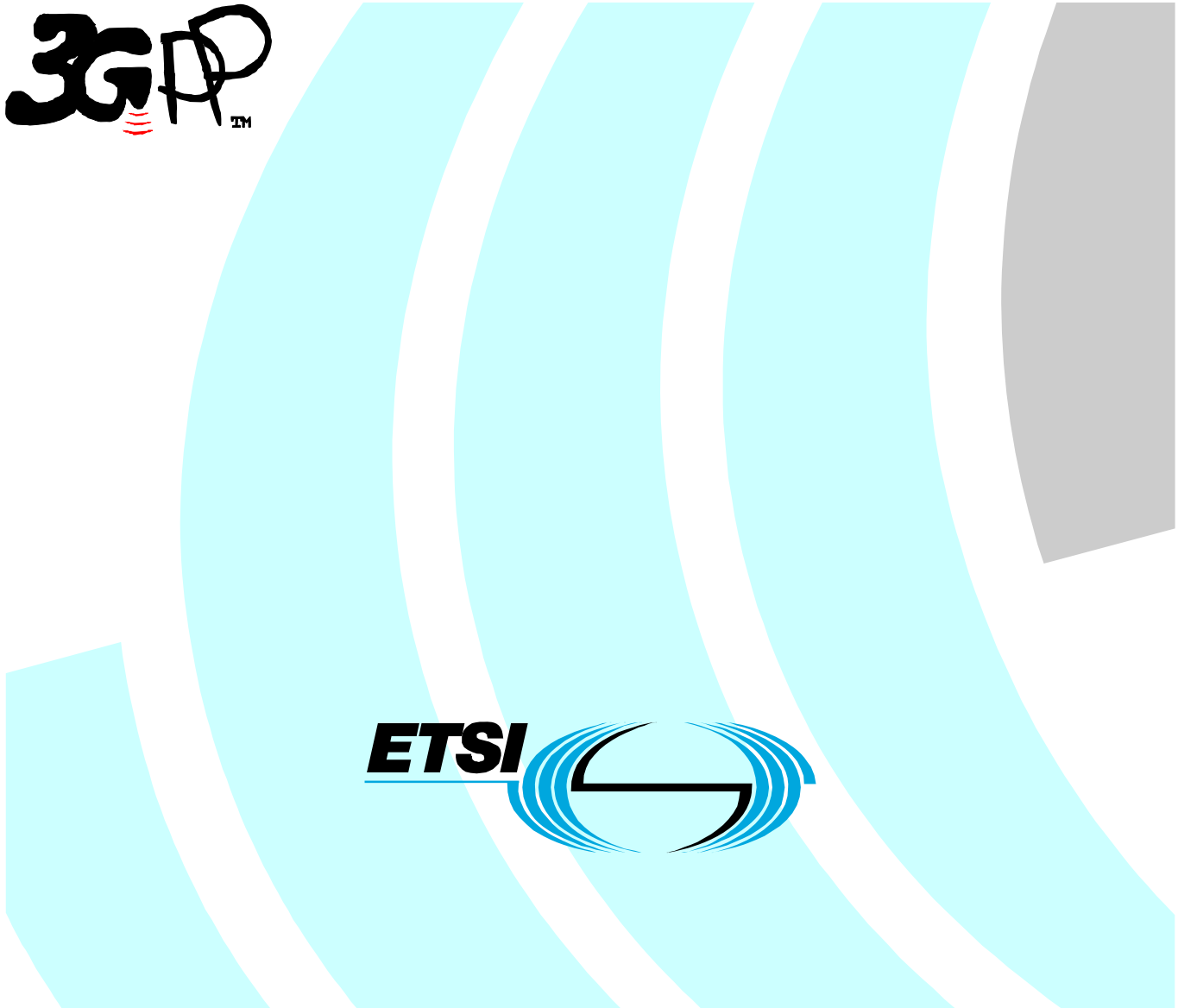
ETSI TS 125 123 V8.1.0 (2009-01)

Technical Specification

Universal Mobile Telecommunications System (UMTS);
Requirements for support of
radio resource management (TDD)
(3GPP TS 25.123 version 8.1.0 Release 8)



Reference
RTS/TSGR-0425123v810

Keywords
UMTS

ETSI

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Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

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Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
 - 1 presented to TSG for information;
 - 2 presented to TSG for approval;
 - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

1 Scope

This Technical Specification specifies requirements for support of Radio Resource Management for TDD. These requirements include requirements on measurements in UTRAN and the UE as well as requirements on node dynamic behaviour and interaction, in terms of delay and response characteristics.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] (void)

[2] (void)

[3] 3GPP TS 25.101: "UE Radio transmission and reception (FDD)".

[4] 3GPP TS 25.104: "UTRAN(BS) FDD; Radio transmission and reception ".

[5] 3GPP TS 25.102: "UTRAN (UE) TDD; Radio transmission and reception ".

[6] 3GPP TS 25.105: "UTRAN (BS) TDD; Radio transmission and reception ".

[7] 3GPP TS 25.303: "Interlayer Procedures in Connected Mode".

[8] (void)

[9] 3GPP TS 25.142: "Base station conformance testing (TDD)".

[10] (void)

[11] (void)

[12] 3GPP TR 25.922: "RRM Strategies".

[13] 3GPP TS 25.321: "MAC protocol specification".

[14] 3GPP TS 25.225: "Physical layer measurements (TDD)".

[15] 3GPP TS 25.302: "Services provided by physical layer".

[16] 3GPP TS 25.331: "RRC protocol specification".

[17] 3GPP TS 25.224: "Physical layer procedures (TDD)".

[18] 3GPP TS 25.304: "UE Procedures in Idle Mode and Procedures for Cell Reselection in Connected Mode ".

[19] ETSI ETR 273-1-2: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Improvement of radiated methods of measurement (using test sites) and evaluation of the corresponding measurement uncertainties; Part 1: Uncertainties in the measurement of mobile radio equipment characteristics; Sub-part 2: Examples and annexes".

[20] 3GPP TS 45.005: "Radio transmission and reception".

[21] 3GPP TS 45.008: "Radio subsystem link control".

[22] 3GPP TS 45.010: "Radio subsystem synchronization".

[23] 3GPP TS 25.214: "Physical layer procedures (FDD)".

[24] 3GPP TS 36.133: "Requirements for support of radio resource management".

[25] 3GPP TS 36.304: "User Equipment (UE) procedures in idle mode".

[26] 3GPP TS 36.101: 'User Equipment (UE) radio transmission and reception'

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purpose of the present document the following terms and definitions apply.

The main general definitions strictly related to the transmission and reception characteristics but important also for the present document can be found in [3] for UE FDD, in [4] for BS FDD, in [5] for UE TDD, in [6] for BS TDD.

Node B: A logical node responsible for radio transmission / reception in one or more cells to/from the User Equipment. Terminates the Iub interface towards the RNC.

Power Spectral Density: The units of Power Spectral Density (PSD) are extensively used in this document. PSD is a function of power versus frequency and when integrated across a given bandwidth, the function represents the mean power in such a bandwidth. When the mean power is normalised to (divided by) the chip-rate it represents the mean energy per chip. Some signals are directly defined in terms of energy per chip, (DPCH_E_c, E_c, OCNS_E_c and P-CCPCH_E_c) and others defined in terms of PSD (I_o, I_{oc}, I_{or} and $\hat{I}_{or}$). There also exist quantities that are a ratio of energy per chip to PSD (DPCH_E_c/I_{or}, E_c/I_{or} etc.). This is the common practice of relating energy magnitudes in communication systems.
It can be seen that if both energy magnitudes in the ratio are divided by time, the ratio is converted from an energy ratio to a power ratio, which is more useful from a measurement point of view. It follows that an energy per chip of X dBm/3.84 MHz (3.84 Mcps TDD option) or X dBm/1.28 MHz (1.28 Mcps TDD option) can be expressed as a mean power per chip of X dBm. Similarly, a signal PSD of Y dBm/3.84 MHz (3.84 Mcps TDD option) or Y dBm/1.28 MHz (1.28 Mcps TDD option) can be expressed as a signal power of Y dBm.

MBSFN cluster: Set of cells operating in MBSFN mode providing only MBMS service in PtM mode and seen as one cell by a UE.

The following two definitions are applicable for LCR TDD multi-frequency operation.

Intra-frequency cell: In idle, CELL-FACH, CELL-PCH and URA-PCH state, intra-frequency cell is defined as the cell of which the primary frequency is the same as the user"s current frequency. In CELL-DCH state, intra-frequency cell is defined as the cell of which the frequency to be measured in that cell is the same as the operating frequency for single carrier operation or is the same as the associated DPCH operating frequency for multi-carrier operation.

Inter-frequency cell: In idle, CELL-FACH, CELL-PCH and URA-PCH state, inter-frequency cell is defined as the cell of which the primary frequency is different from the user"s current frequency. In CELL-DCH state, inter-frequency cell is defined as the cell of which the frequency to be measured in that cell is different from the operating frequency for single carrier operation or is different from the associated DPCH operating frequency for multi-carrier operation.

3.2 Symbols

For the purposes of the present document, the following symbols apply:

[…] Values included in square bracket must be considered for further studies, because it means that a decision about that value was not taken.

$\frac{DPCH_E_c}{I_{or}}$ The ratio of the transmit energy per PN chip of the DPCH to the total transmit power spectral density at the Node B antenna connector.

E_c Average energy per PN chip.

$\hat{E}s$ Received energy per RE (power normalized to the subcarrier spacing) during the useful part of the symbol, i.e. excluding the cyclic prefix, at the UE antenna connector

$\frac{\boldsymbol{E_c}}{\boldsymbol{I_{or}}}$ The ratio of the average transmit energy per PN chip for different fields or physical channels to the total transmit power spectral density at the Node B antenna connector.

I_o The total received power spectral density, including signal and interference, as measured at the UE antenna connector.

$\boldsymbol{I}_{ob}$ The total received power density, including signal and interference, as measured at the BS antenna connector.

$\boldsymbol{I_{oc}}$ The power spectral density (integrated in a noise bandwidth equal to the chip rate and normalized to the chip rate) of a band limited white noise source (simulating interference from cells, which are not defined in a test procedure) as measured at the UE antenna connector.

$\boldsymbol{I_{or}}$ The total transmit power spectral density (integrated in a bandwidth of (1+α) times the chip rate and normalized to the chip rate) of the down link signal at the Node B antenna connector.

$\hat{\boldsymbol{I}}_{\boldsymbol{or}}$ The received power spectral density (integrated in a bandwidth of (1+α) times the chip rate and normalized to the chip rate) of the down link signal as measured at the UE antenna connector.

Iot The received power spectral density of the total noise and interference for a certain RE (power integrated over the RE and normalized to the subcarrier spacing) as measured at the UE antenna connector

$\frac{OCNS_E_c}{I_{or}}$ The ratio of the average transmit energy per PN chip for the OCNS to the total transmit power spectral density at the Node B antenna connector.

$\frac{PICH_E_c}{I_{or}}$ The ratio of the average transmit energy per PN chip for the PICH to the total transmit power spectral density at the Node B antenna connector.

$\frac{PCCPCH_E_c}{I_{or}}$ The ratio of the average transmit energy per PN chip for the PCCPCH to the total transmit power spectral density at the Node B antenna connector.

$\frac{SCH_E_c}{I_{or}}$ The ratio of the average transmit energy per PN chip for the SCH to the total transmit power spectral density at the Node B antenna connector. The transmit energy per PN chip for the SCH is averaged over the 256 chip duration when the SCH is present in the time slot

SCH_RP Received (linear) average power of the resource elements that carry E-UTRA synchronisation signal, measured at the UE antenna connector.

PENALTY_TIME Defined in TS 25.304

Qhyst Defined in TS 25.304

$Qoffset_{s,n}$ Defined in TS 25.304

Qqualmin Defined in TS 25.304

Qrxlevmin Defined in TS 25.304

Sintersearch Defined in TS 25.304

Sintrasearch Defined in TS 25.304

SsearchRAT Defined in TS 25.304

T1 Time period 1

T2 Time period 2

TEMP_OFFSET Defined in TS 25.304

Treselection	Defined in TS 25.304
UE_TXPWR_MAX_RACH	Defined in TS 25.304

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ACPR	Adjacent Channel Power Ratio
AWGN	Additive White Gaussian Noise
BER	Bit Error Ratio
BLER	Block Error Ratio
BS	Base Station
CW	Continuous wave (unmodulated signal)
CFN	Connection Frame Number
CPICH	Common Pilot Channel
DL	Downlink (forward link)
DPCH	Dedicated Physical Channel
DRX	Discontinuous Reception
EIRP	Equivalent Isotropic Radiated Power
eNB	E-UTRAN NodeB
FDD	Frequency Division Duplex
GERAN	GSM EDGE Radio Access Network
GSM	Global System for Mobile communication
HO	Handover
MBSFN	MBMS over a Single Frequency Network
OCNS	Orthogonal Channel Noise Simulator, a mechanism used to simulate the users or control signals on the other orthogonal channels of a Forward link.
OFDM	Orthogonal Frequency Division Multiplexing
OFDMA	Orthogonal Frequency Division Multiple Access
P-CCPCH	Primary Common Control Physical Channel
PICH	Paging Indicator Channel
PIN	Personal Identification Number
PLMN	Public Land Mobile Network
PPM	Parts Per Million
QAM	Quadrature Amplitude Modulation
RAT	Radio Access Technology
RNC	Radio Network Controller
RRM	Radio Resource Management
RRC	Radio Resource Control
RSCP	Received Signal Code Power
RSRP	Reference Signal Received Power
RSRQ	Reference Signal Received Quality
RSSI	Received Signal Strength Indicator
SCH	Synchronization Channel consisting of Primary and Secondary synchronization channels
SFN	System Frame Number
SIR	Signal to Interference ratio
TDD	Time Division Duplex
TPC	Transmit Power Control
TTI	Transmission Time Interval
UE	User Equipment
UL	Uplink (reverse link)
UTRA	UMTS Terrestrial Radio Access
UTRAN	Universal Terrestrial Radio Access Network

3.4 Test tolerances

The requirements given in the present document make no allowance for measurement uncertainty. The test specification 34.122 and 25.142 define test tolerances. These test tolerances are individually calculated for each test. The test tolerances are then added to the limits in this specification to create test limits. The measurement results are compared against the test limits as defined by the shared risk principle.

Shared Risk is defined in ETR 273 Part 1 sub-part 2 subclause 6.5.

4 Idle Mode

4.1 Cell Selection

4.1.1 Introduction

After a UE has switched on and a PLMN has been selected, the Cell selection process takes place, as described in [18]. This process allows the UE to select a suitable cell where to camp on in order to access available services. In this process the UE can use stored information (*Stored information cell selection*) or not (*Initial cell selection*).

4.2 Cell Re-selection

4.2.1 Introduction

4.2.1.1 3.84 Mcps TDD option

The cell reselection procedure allows the UE to select a more suitable cell and camp on it.

When the UE is in either *Camped Normally state or Camped on Any Cell* state on a TDD cell, the UE shall attempt to identify, synchronise and monitor intra-frequency, inter-frequency and inter-RAT cells indicated in the measurement control system information of the serving cell. UE measurement activity is also controlled by measurement rules defined in [18], allowing the UE to limit its measurement activity if certain conditions are fullfilled.

4.2.1.2 1.28 Mcps TDD option

The cell reselection procedure allows the UE to select a more suitable cell and camp on it.

When the UE is in either *Camped Normally* state or *Camped on Any Cell* state on a TDD cell, the UE shall attempt to identify, synchronise and monitor intra-frequency, inter-frequency and inter-RAT cells indicated in the measurement control system information of the serving cell. UE measurement activity is also controlled by measurement rules defined in [18], allowing the UE to limit its measurement activity if certain conditions are fullfilled.

4.2.1.3 7.68 Mcps TDD option

The cell reselection procedure allows the UE to select a more suitable cell and camp on it.

When the UE is in either *Camped Normally state or Camped on Any Cell* state on a TDD cell, the UE shall attempt to identify, synchronise and monitor intra-frequency, inter-frequency and inter-RAT cells indicated in the measurement control system information of the serving cell. UE measurement activity is also controlled by measurement rules defined in [18], allowing the UE to limit its measurement activity if certain conditions are fullfilled.

4.2.2 Requirements

When absolute priority reselection is in use, UE shall search every layer of higher priority at least every $T_{higher_proirty_search} = (60 * N_{layers})$ seconds, where N_{layers} is the total number of configured higher priority E-UTRA, UTRA FDD and UTRA TDDcarrier frequencies and is additionally increased by one if GSM is configured as a higher priority.

Editors note: The measurement of cells that are detected in this search is still to be described.

4.2.2.1 Measurement and evaluation of cell selection criteria S of serving cell

4.2.2.1.1 3.84 Mcps TDD option

The UE shall measure the PCCPCH RSCP level of the serving cell and evaluate the cell selection criterion S_{rxlev} defined in [18] for the serving cell at least every DRX cycle. The UE shall filter the PCCPCH RSCP measurement of the serving cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureTDD}/2$ (see table 4.1).

If the UE has evaluated in N_{serv} successive measurements that the serving cell does not fulfil the cell selection criterion S, the UE shall initiate the measurements of all neighbour cells indicated in the measurement control system information, regardless of the measurement rules currently limiting UE measurement activities.

If the UE has not found any new suitable cell based the on searches and measurements of the neighbour cells indicated in the measurement control system information for 12 s, the UE shall initiate cell selection procedures for the selected PLMN as defined in [18].

On transition from CELL_DCH to CELL_PCH/URA_PCH, if a UE cannot find a suitable UTRA cell, then it is considered to be "out of service area" and shall perform actions according to [16].

4.2.2.1.2 1.28 Mcps TDD option

The UE shall measure the PCCPCH RSCP level of the serving cell and evaluate the cell selection criterion S defined in [18] for the serving cell at least every DRX cycle. The UE shall filter the PCCPCH RSCP level of the serving cell using at least 2 measurements, which are taken so that the time difference between the first measurement and the last measurement used for filtering is at least $T_{measureNTDD}/2$ (see table 4.1A).

If the UE has evaluated in N_{serv} consecutive DRX cycles that the serving cell does not fulfil the cell selection criterion S the UE shall initiate the measurements of all neighbour cells indicated in the measurement control system information, regardless of the measurement rules currently limiting UE measurement activities.

If the UE has not found any new suitable cell based the on searches and measurements of the neighbour cells indicated in the measurement control system information for 12 s, the UE shall initiate cell selection procedures for the selected PLMN as defined in [18].

After this 12 s period a UE in Cell_PCH or URA_PCH is considered to be "out of service area" and shall perform actions according to [16].

On transition from CELL_DCH to CELL_PCH/URA_PCH, if a UE cannot find a suitable UTRA cell, then it is considered to be "out of service area" and shall perform actions according to [16].

4.2.2.1.3 7.68 Mcps TDD option

The UE shall measure the PCCPCH RSCP level of the serving cell and evaluate the cell selection criterion S_{rxlev} defined in [18] for the serving cell at least every DRX cycle. The UE shall filter the PCCPCH RSCP measurement of the serving cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureTDD}/2$ (see table 4.1B).

If the UE has evaluated in N_{serv} successive measurements that the serving cell does not fulfil the cell selection criterion S, the UE shall initiate the measurements of all neighbour cells indicated in the measurement control system information, regardless of the measurement rules currently limiting UE measurement activities.

If the UE has not found any new suitable cell based the on searches and measurements of the neighbour cells indicated in the measurement control system information for 12 s, the UE shall initiate cell selection procedures for the selected PLMN as defined in [18].

On transition from CELL_DCH to CELL_PCH/URA_PCH, if a UE cannot find a suitable UTRA cell, then it is considered to be "out of service area" and shall perform actions according to [16].

4.2.2.2 Measurement of intra-frequency cells

4.2.2.2.1 3.84 Mcps option

The UE shall measure PCCPCH RSCP at least every $T_{measureTDD}$ (see table 4.1) for intra-frequency cells that are identified and measured according to the measurement rules. $T_{measureTDD}$ is defined in Table 4.1. The UE shall filter PCCPCH RSCP measurements of each measured intra-frequency cell using at least 2 measurements, which are taken so that the time difference between the first measurement and the last measurements used for filtering is at least $T_{measureTDD}/2$.

The filtering shall be such that the UE shall be capable of evaluating that an intra-frequency cell has become better ranked than the serving cell within $T_{evaluateTDD}$ (see table 4.1), from the moment the intra-frequency cell became at least 2 dB better ranked than the current serving cell, provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the intra frequency cell is better ranked than the serving cell, the UE shall evaluate this intra frequency cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

If the UE is receiving the MTCH, the UE shall be able to identify new intra-frequency cells and take them into use for MTCH combing purposes as defined in section 8.4.2.2.1.

4.2.2.2.2 1.28 Mcps option

The UE shall measure PCCPCH RSCP at least every $T_{measureNTDD}$ (see table 4.1A) for intra-frequency cells that are identified and measured according to the measurement rules. $T_{measureNTDD}$ is defined in Table 4.1A. The UE shall filter PCCPCH RSCP measurements of each measured intra-frequency cell using at least 2 measurements, which are taken so that the time difference between the first measurement and the last measurement used for filtering is at least $T_{measureNTDD}/2$.

The filtering shall be such that the UE shall be capable of evaluating that an intra-frequency cell has become better ranked than the serving cell within $T_{evaluateNTDD}$ (see table 4.1A), from the moment the intra-frequency cell became at least 3 dB better ranked than the current serving cell, provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the intra frequency cell is better ranked than the serving cell, the UE shall evaluate this intra frequency cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

If the UE is receiving the MTCH, the UE shall be able to identify new intra-frequency cells and take them into use for MTCH combing purposes as defined in section 8.4A.2.2.1.

4.2.2.2.3 7.68 Mcps option

The UE shall measure PCCPCH RSCP at least every $T_{measureTDD}$ (see table 4.1B) for intra-frequency cells that are identified and measured according to the measurement rules. $T_{measureTDD}$ is defined in Table 4.1B. The UE shall filter PCCPCH RSCP measurements of each measured intra-frequency cell using at least 2 measurements, which are taken so that the time difference between the first measurement and the last measurements used for filtering is at least $T_{measureTDD}/2$.

The filtering shall be such that the UE shall be capable of evaluating that an intra-frequency cell has become better ranked than the serving cell within $T_{evaluateTDD}$ (see table 4.1B), from the moment the intra-frequency cell became at least 2 dB better ranked than the current serving cell, provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the intra frequency cell is better ranked than the serving cell, the UE shall evaluate this intra frequency cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

4.2.2.3 Measurement of inter-frequency TDD cells

4.2.2.3.1 3.84 Mcps option

The UE shall measure PCCPCH RSCP at least every $(N_{carrier}-1) * T_{measureTDD}$ (see table 4.1) for inter-frequency cells that are identified and measured according to the measurement rules. The parameter $N_{carrier}$ is the number of carriers used for

TDD cells. The UE shall filter PCCPCH RSCP measurements of each measured inter-frequency cell using at least 2 measurements, which are taken so that the time difference between the first and the last measurements used for filtering is at least $T_{measureTDD}/2$.

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that an already identified inter-frequency cell has become better ranked than the serving cell within $(N_{carrier}-1) * T_{evaluateTDD}$ from the moment the inter-frequency cell became at least 3 dB better than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better than the current serving cell provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the inter-frequency cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

4.2.2.3.2 1.28 Mcps option

The UE shall measure PCCPCH RSCP at least every $(N_{carrier}-1) * T_{measureNTDD}$ (see table 4.1A) for inter-frequency 1.28 Mcps TDD OPTION cells that are identified and measured according to the measurement rules. The parameter $N_{carrier}$ is the number of carriers used for 1.28 Mcps TDD OPTION cells. The UE shall filter PCCPCH RSCP measurements of each measured inter-frequency cell using at least 2 measurements, which are taken so that the time difference between the first measurement and the last measurement used for filtering is at least $T_{measureNTDD}/2$.

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that an already identified inter-frequency cell has become better ranked than the serving cell within $(N_{carrier}-1) * T_{evaluateNTDD}$ from the moment the inter-frequency cell became at least 6 dB better ranked than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 6 dB better ranked than the current serving cell provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the inter-frequency cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

In the case of multi-frequency network, $N_{carrier}$ is the number of primary frequencies.

4.2.2.3.3 7.68 Mcps option

The UE shall measure PCCPCH RSCP at least every $(N_{carrier}-1) * T_{measureTDD}$ (see table 4.1B) for inter-frequency cells that are identified and measured according to the measurement rules. The parameter $N_{carrier}$ is the number of carriers used for TDD cells. The UE shall filter PCCPCH RSCP measurements of each measured inter-frequency cell using at least 2 measurements, which are taken so that the time difference between the first and the last measurements used for filtering is at least $T_{measureTDD}/2$.

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that an already identified inter-frequency cell has become better ranked than the serving cell within $(N_{carrier}-1) * T_{evaluateTDD}$ from the moment the inter-frequency cell became at least 3 dB better than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better than the current serving cell provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the inter-frequency cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

4.2.2.3A 1.28 Mcps TDD to 3.84 Mcps TDD cell re-selection

This requirement only applies to 1.28 Mcps UEs supporting this mode.

The ranking of the low and high chip rate TDD cells shall be made according to the cell reselection criteria specified in [18].

The UE shall measure PCCPCH RSCP at least every $N_{TDDcarrier}$ * $T_{measureTDD}$ (see table 4.1A) for inter-frequency cells that are identified and measured according to the measurement rules. The parameter $N_{carrier}$ is the number of carriers used for 3.84 Mcps TDD cells. The UE shall filter PCCPCH RSCP measurements of each measured high chip rate TDD cell using at least 2 measurements, which are taken so that the time difference between the first measurement and the last measurement used for filtering is at least $T_{measureTDD}/2$.

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that a high chip rate TDD cell has become better ranked than the serving cell within $N_{TDDcarrier}$ * $T_{evaluateTDD}$ from the moment the inter-frequency cell became at least 3 better ranked than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better ranked than the current serving cell provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the inter-frequency 3.84Mcps TDD cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency 3.84Mcps TDD cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

4.2.2.3B 3.84 Mcps TDD to 1.28 Mcps TDD cell re-selection

This requirement in this section only applies to UEs supporting both 3.84 Mcps TDD and 1.28Mcps TDD.

The UE shall measure PCCPCH RSCP at least every $N_{carrierNTDD}$ * $T_{measureNTDD}$ (see table 4.1A) for inter-frequency 1.28 Mcps TDD OPTION cells that are identified and measured according to the measurement rules. The parameter $N_{carrierNTDD}$ is the number of carriers used for 1.28 Mcps TDD cells. The UE shall filter PCCPCH RSCP measurements of each measured 1.28 Mcps TDD cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureNTDD}/2$.

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that a 1.28 Mcps TDD cell has become better ranked than the serving cell within $N_{carrierNTDD}$ * $T_{evaluateNTDD}$ from the moment the inter-frequency cell became at least 3 better ranked than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better ranked than the current serving cell provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the inter-frequency 1.28 Mcps TDD cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency 1.28 Mcps TDD cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

In the case of cell re-selection to 1.28 Mcps TDD multi-frequency network, $N_{carrierNTDD}$ is the number of primary frequencies.

4.2.2.3C 7.68 Mcps TDD to 3.84 Mcps TDD cell re-selection

This requirement in this section only applies to UEs supporting both 3.84 Mcps TDD and 7.68Mcps TDD.

The ranking of 3.84 Mcps and 7.68 Mcps chip rate TDD cells shall be made according to the cell reselection criteria specified in [18].

The UE shall measure PCCPCH RSCP at least every $N_{TDDcarrier}$ * $T_{measureTDD}$ (see Table 4.1B) for inter-frequency cells that are identified and measured according to the measurement rules. The parameter $N_{carrier}$ is the number of carriers used for 3.84 Mcps TDD cells. The UE shall filter PCCPCH RSCP measurements of each measured 3.84 Mcps chip rate TDD cell using at least 2 measurements, which are taken so that the time difference between the first measurement and the last measurement used for filtering is at least $T_{measureTDD}/2$.

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that a 3.84 Mcps chip rate TDD cell has become better ranked than the serving cell within $N_{TDDcarrier}$ * $T_{evaluateTDD}$ from the moment the inter-frequency cell became at least 3 better ranked than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better ranked than the current serving cell provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the inter-frequency 3.84Mcps TDD cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency 3.84Mcps TDD cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

4.2.2.3D 3.84 Mcps TDD to 7.68 Mcps TDD cell re-selection

This requirement in this section only applies to UEs supporting both 3.84 Mcps TDD and 7.68Mcps TDD.

The UE shall measure PCCPCH RSCP at least every $N_{carrierNTDD} * T_{measureNTDD}$ (see Table 4.1B) for inter-frequency 7.68 Mcps TDD OPTION cells that are identified and measured according to the measurement rules. The parameter $N_{carrierNTDD}$ is the number of carriers used for 7.68 Mcps TDD cells. The UE shall filter PCCPCH RSCP measurements of each measured 7.68 Mcps TDD cell using at least 2 measurements, which are taken so that the time difference between the first measurement and the last measurement is at least $T_{measureNTDD}/2$.

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that a 7.68 Mcps TDD cell has become better ranked than the serving cell within $N_{carrierNTDD} * T_{evaluateNTDD}$ from the moment the inter-frequency cell became at least 3 better ranked than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better ranked than the current serving cell provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the inter-frequency 7.68 Mcps TDD cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency 7.68 Mcps TDD cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

4.2.2.4 Measurement of inter-frequency FDD cells

4.2.2.4.1 3.84 Mcps option

The UE shall measure the CPICH RSCP and CPICH Ec/Io of each FDD neighbour cell indicated in the measurement control system information of the serving cell, according to the measurement rules defined in [18], at least every $T_{measureFDD}$ (see table 4.1). The UE shall filter CPICH RSCP measurements of each measured inter-frequency cell using at least 2 measurements which are taken so that the time difference between the first and last measurements used for filtering is at least $T_{measureFDD}/2$..

The filtering of CPICH RSCP shall be such that the UE shall be capable of evaluating that an already identified inter-frequency cell has become better ranked than the serving cell within $N_{carrierFDD} * T_{evaluateFDD}$ from the moment the inter-frequency cell became at least 5 dB better than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 5 dB better than the current serving cell provided that Treselection timer is set to zero. The parameter $N_{carrierFDD}$ is the number of carriers used for FDD cells.

If Treselection timer has a non zero value and the inter-frequency cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

The ranking of the cells shall be made according to the cell reselection criteria specified in [18]. If FDD cell has been ranked as the best cell and IE cell_selection_and_reselection-quality_measure is set to CPICH Ec/No, then UE shall perform a second ranking of the FDD cells using CPICH Ec/Io as the measurement quantity, before performing cell re-selection.

4.2.2.4.2 1.28 Mcps option

This requirement only applies to 1.28 Mcps UEs supporting both 1.28 Mcps TDD OPTION and FDD.

The UE shall measure the CPICH RSCP and CPICH Ec/Io at least every $N_{carrierFDD} * T_{measureFDD}$ (see table 4.1A) for inter-frequency FDD cells that are identified and measured according to the measurement rules. The UE shall filter CPICH RSCP measurements of each measured inter-frequency cell using at least 2 measurements which are taken so that the time difference between the first measurement and the last measurement used for filtering is at least $T_{measureFDD}/2$.

CPICH RSCP is used as basic measurement quantity for cell ranking, the filtering of CPICH RSCP shall be such that the UE shall be capable of evaluating that an already identified inter-frequency cell has become better ranked than the serving cell within $N_{carrierFDD} * T_{evaluateFDD}$ from the moment the inter-frequency cell became at least 5 dB better ranked than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 5 dB better ranked than the current serving cell provided that Treselection timer is set to zero. The parameter $N_{carrierFDD}$ is the number of carriers used for FDD cells.

If Treselection timer has a non zero value and the inter-frequency FDD cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency FDD cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304. If FDD cell has been ranked as the best cell and IE cell_selection_and_reselection-quality_measure is set to CPICH Ec/No, then UE shall perform a second ranking of the FDD cells using CPICH Ec/Io as the measurement quantity, before performing cell re-selection.

4.2.2.4.3 7.68 Mcps option

The UE shall measure the CPICH RSCP and CPICH Ec/Io of each FDD neighbour cell indicated in the measurement control system information of the serving cell, according to the measurement rules defined in [18], at least every $T_{measureFDD}$ (see table 4.1B). The UE shall filter CPICH RSCP measurements of each measured inter-frequency cell using at least 2 measurements which are taken so that the time difference between the first and last measurements used for filtering is at least $T_{measureFDD}/2$..

The filtering of CPICH RSCP shall be such that the UE shall be capable of evaluating that an already identified inter-frequency cell has become better ranked than the serving cell within $N_{carrierFDD} * T_{evaluateFDD}$ from the moment the inter-frequency cell became at least 5 dB better than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 5 dB better than the current serving cell provided that Treselection timer is set to zero. The parameter $N_{carrierFDD}$ is the number of carriers used for FDD cells.

If Treselection timer has a non zero value and the inter-frequency cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

The ranking of the cells shall be made according to the cell reselection criteria specified in [18]. If FDD cell has been ranked as the best cell and IE cell_selection_and_reselection-quality_measure is set to CPICH Ec/No, then UE shall perform a second ranking of the FDD cells using CPICH Ec/Io as the measurement quantity, before performing cell re-selection.

4.2.2.5 Measurement of inter-RAT GSM cells

4.2.2.5.1 3.84 Mcps option

The UE shall measure the signal level of the GSM BCCH carrier of each GSM neighbour cell indicated in the measurement control system information of the serving cell, according to the measurement rules defined in [18], at least every $T_{measureGSM}$ (see table 4.1). The UE shall maintain a running average of 4 measurements for each cell. The measurement samples for each cell shall be as far as possible uniformly distributed over the averaging period.

If GSM measurements are required by the measurement rules in [18], The UE shall attempt to verify the BSIC at least every 30 seconds for each of the 4 strongest GSM BCCH carriers and rank the verified GSM BCCH cells according to the cell re-selection criteria in [18]. If a change of BSIC is detected for one GSM cell then that GSM BCCH carrier shall be treated as a new GSM neighbour cell.

If the UE detects a BSIC, which is not indicated in the measurement control system information, the UE shall not consider that GSM BCCH carrier in cell reselection. The UE also shall not consider the GSM BCCH carrier in cell reselection, if the UE can not demodulate the BSIC of that GSM BCCH carrier.

If Treselection timer has a non zero value and the inter-RAT GSM cell is better ranked than the serving cell, the UE shall evaluate this inter-RAT GSM cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

4.2.2.5.2 1.28 Mcps option

The UE shall measure the signal level of the GSM BCCH carrier of each GSM neighbour cell indicated in the measurement control system information of the serving cell, according to the measurement rules defined in [18], at least every $T_{measureGSM}$ (see table 4.1A). The UE shall maintain a running average of 4 measurements for each cell. The measurement samples for each cell shall be as far as possible uniformly distributed over the averaging period.

If GSM measurements are required by the measurement rules in [18], the UE shall attempt to verify the BSIC at least every 30 seconds for each of the 4 strongest GSM BCCH carriers and rank the verified GSM BCCH cells according to the cell re-selection criteria in [18]. If a change of BSIC is detected for one GSM cell then that GSM BCCH carrier shall be treated as a new GSM neighbour cell.

If the UE detects a BSIC, which is not indicated in the measurement control system information, the UE shall not consider that GSM BCCH carrier in cell reselection. The UE also shall not consider the GSM BCCH carrier in cell reselection, if the UE can not demodulate the BSIC of that GSM BCCH carrier.

If Treselection timer has a non zero value and the inter-RAT GSM cell is better ranked than the serving cell, the UE shall evaluate this inter-RAT GSM cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

4.2.2.5.3 7.68 Mcps option

The UE shall measure the signal level of the GSM BCCH carrier of each GSM neighbour cell indicated in the measurement control system information of the serving cell, according to the measurement rules defined in [18], at least every $T_{measureGSM}$ (see table 4.1B). The UE shall maintain a running average of 4 measurements for each cell. The measurement samples for each cell shall be as far as possible uniformly distributed over the averaging period.

If GSM measurements are required by the measurement rules in [18], The UE shall attempt to verify the BSIC at least every 30 seconds for each of the 4 strongest GSM BCCH carriers and rank the verified GSM BCCH cells according to the cell re-selection criteria in [18]. If a change of BSIC is detected for one GSM cell then that GSM BCCH carrier shall be treated as a new GSM neighbour cell.

If the UE detects a BSIC, which is not indicated in the measurement control system information, the UE shall not consider that GSM BCCH carrier in cell reselection. The UE also shall not consider the GSM BCCH carrier in cell reselection, if the UE can not demodulate the BSIC of that GSM BCCH carrier.

If Treselection timer has a non zero value and the inter-RAT GSM cell is better ranked than the serving cell, the UE shall evaluate this inter-RAT GSM cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

4.2.2.5a Measurements of inter-RAT E-UTRA cells

The UE shall be able to identify new E-UTRA cells and perform RSRP measurements of identified E-UTRA cells if carrier frequency information is provided by the serving cell, even if no explicit neighbour list with physical layer cell identities is provided.

If the S-value of the UTRA serving cell is greater than $Thresh_{serving_high}$ then

- the UE may not search for, or measure E-UTRA layers of equal or lower priority.
- the UE shall search for and measure E-UTRA layers of higher priority. The minimum rate at which the UE is required to search for and measure such layers may be reduced in this scenario to maintain UE battery life. Details are still FFS.

If the S-value of the UTRA serving cell is less than or equal to $Thresh_{serving_high}$ then the UE shall search for and measure E-UTRA frequency layers of higher or lower priority in preparation for possible reselection. In this scenario, the minimum rate at which the UE is required to search for and measure such layers is not reduced.

The UE shall be able to identify a new detectable inter-RAT E-UTRA cell within $K_{carrier}$ * [30] seconds if at least E-UTRA carrier frequency information is provided in the inter-RAT measurement control system information . The parameter $K_{carrier}$ is the number of E-UTRA carrier frequencies indicated in the inter-RAT measurement control system information. It shall be possible to evaluate the need for reselection to E-UTRA cells which have:

- RSRP $\geq$ -TBD dBm and Ês/Iot > [-3] dB,
- SCH RP $\geq$ -TBD dBm and SCH Ês/Iot > [-3] dB.

The UE shall measure RSRP at least every $K_{carrier}$ * $T_{measure,EUTRA_}$as defined in table 4.2 or 4.2A or 4.3B for identified E-UTRA cells.

If the UE detects on a E-UTRA carrier a cell whose physical identity is indicated as not allowed for that carrier in the measurement control system information of the serving cell, the UE is not required to perform measurements on that cell.

The UE shall filter RSRP measurements of each measured E-UTRA cell using at least [2] measurements. Within the set of measurements used for the filtering, at least two measurements shall be spaced by at least ($K_{carrier}$ * $T_{measure,EUTRA}$)/2.

RSRP measurements of E-UTRA cells shall not be filtered over a longer period than that specified in Table 4.2 or 4.2A or 4.2B.

The UE shall not consider an E-UTRA neighbour cell in cell reselection, if it is indicated as not allowed in the measurement control system information of the serving cell.

The filtering shall be such that the UE shall be capable of evaluating that the EUTRAN cell has met reselection criterion defined TS 36.304 within $K_{carrier}$ *$T_{evaluateEUTRA}$ as specified in table 4.2 or 4.2A or 4.2B

4.2.2.6 Evaluation of cell reselection criteria

4.2.2.6.1 3.84 Mcps option

The UE shall evaluate the cell re-selection criteria defined in [18] for the cells, which have new measurement results available, at least once every DRX cycle.

UE shall perform cell reselection immediately after the UE has found a better ranked suitable cell unless less than 1 second has elapsed from the moment the UE started camping on the current serving cell.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304.

4.2.2.6.2 1.28 Mcps option

The UE shall evaluate the cell re-selection criteria defined in [18] for the cells, which have new measurement results available, at least every DRX cycle.

Cell reselection shall take place immediately after the UE has found a better ranked suitable cell unless the UE has made cell reselection within the last 1 second.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304.

4.2.2.6.3 7.68 Mcps option

The UE shall evaluate the cell re-selection criteria defined in [18] for the cells, which have new measurement results available, at least once every DRX cycle.

UE shall perform cell reselection immediately after the UE has found a better ranked suitable cell unless less than 1 second has elapsed from the moment the UE started camping on the current serving cell.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304.

4.2.2.7 Maximum interruption time in paging reception

4.2.2.7.1 3.84 Mcps option

UE shall perform the cell re-selection with minimum interruption in monitoring downlink channels for paging reception.

At intra-frequency cell re-selection, the UE shall monitor the downlink of current serving cell for paging reception until the UE is capable to start monitoring downlink channels of the target intra-frequency cell for paging reception. The interruption time shall not exceed 50 ms.

At inter-frequency and inter-RAT cell re-selection, the UE shall monitor the downlink of current serving cell for paging reception until the UE is capable to start monitoring downlink channels for paging reception of the target inter-frequency cell. For inter-frequency cell re-selection, the interruption time shall not exceed T_{SI} + 50 ms. For inter-RAT cell re-selection the interruption time shall not exceed T_{BCCH} + 50 ms for GSM or $T_{SI\ EUTRA}$ + [50ms] for E-UTRA.

T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in [16] for a UTRAN cell.

T_{BCCH} is the maximum time allowed to read BCCH data from a GSM cell as defined in [21].

$T_{SI\text{-}EUTRA}$ is the maximum time allowed to read system information from a E-UTRA cell [24].

These requirements assume sufficient radio conditions, so that decoding of system information can be made without errors.

Table 4.1: $T_{measureTDD}$, $T_{evaluateTDD}$, $T_{measureNTDD}$, $T_{evaluateNTDD}$, $T_{measureFDD}$, $T_{evaluateFDD}$ and $T_{measureGSM}$

DRX cycle length [s]	N_{serv} (number of DRX cycles)	$T_{measureTDD}$ [s] (number of DRX cycles)	$T_{evaluateTDD}$ [s] (number of DRX cycles)	$T_{measureNTDD}$ [s] (number of DRX cycles)	$T_{evaluateNTDD}$ [s] (number of DRX cycles)	$T_{measureFDD}$ [s] (number of DRX cycles)	$T_{evaluateFDD}$ [s] (number of DRX cycles)	$T_{measureGSM}$ [s] (number of DRX cycles)
0.08	4	0.64 (8 DRX cycles)	2.56 (32 DRX cycles)	0.64 (8 DRX cycles)	2.56 (32 DRX cycles)	0.64 (8 DRX cycles)	2.56 (32 DRX cycles)	2.56 (32 DRX cycles)
0.16	4	0.64 (4)	2.56 (16)	0.64 (4)	2.56 (16)	0.64 (4)	2.56 (16)	2.56 (16)
0.32	4	1.28 (4)	5.12 (16)	1.28 (4)	5.12 (16)	1.28 (4)	5.12 (16)	5.12 (16)
0.64	4	1.28 (2)	5.12 (8)	1.28 (2)	5.12 (8)	1.28 (2)	5.12 (8)	5.12 (8)
1.28	2	1.28 (1)	6.4 (5)	1.28 (1)	6.4 (5)	1.28 (1)	6.4 (5)	6.4 (5)
2.56	2	2.56 (1)	7.68 (3)	2.56 (1)	7.68 (3)	2.56 (1)	7.68 (3)	7.68 (3)
5.12	1	5.12 (1)	10.24 (2)	5.12 (1)	10.24 (2)	5.12 (1)	10.24 (2)	10.24 (2)

Table 4.2: $T_{measureE\text{-}UTRA}$ and $T_{evaluateEUTRA}$

DRX cycle length [s]	$T_{measureE\text{-}UTRA}$ [s] (number of DRX cycles)	$T_{evaluateEUTRA}$ [s] (number of DRX cycles)
0.08	[2.56 (32)]	[7.68 (96)]
0.16	[[2.56 (16)]	[7.68 (48)]
0.32	[5.12 (16)]	[15.36 (48)]
0.64	[5.12 (8)]	[15.36 (24)]
1.28	[6.4 (5)]	[19.2 (15)]
2.56	[7.68 (3)]	[23.04 (9)]
5.12	[10.24 (2)]	[30.72 (6)]

In idle mode, UE shall support DRX cycles lengths 0.64, 1.28, 2.56 and 5.12 s, according to [16].

4.2.2.7.2 1.28 Mcps option

UE shall perform the cell re-selection with minimum interruption in monitoring downlink channels for paging reception.

At intra-frequency cell re-selection, the UE shall monitor the downlink of current serving cell for paging reception until the UE is capable to start monitoring downlink channels of the target intra-frequency cell for paging reception. The interruption time shall not exceed 50 ms.

At inter-frequency and inter-RAT cell re-selection, the UE shall monitor the downlink of current serving cell for paging reception until the UE is capable to start monitoring downlink channels for paging reception of the target inter-frequency cell. For inter-frequency cell re-selection he interruption time must not exceed T_{SI} + 50 ms. For inter-Rat cell re-selection the interruption time must not exceed T_{BCCH}+50 ms for GSM or $T_{SI\ EUTRA}$ + [50ms] for E-UTRA.

T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in [16] for a UTRAN cell.

T_{BCCH} is the maximum time allowed to read BCCH data from a GSM cell [21].

$T_{SI\text{-}EUTRA}$ is the maximum time allowed to read system information from a E-UTRA cell [24].

These requirements assume sufficient radio conditions, so that decoding of system information can be made without errors and does not take into account cell re-selection failure.

Table 4.1A: $T_{measureNTDD}$, $T_{evaluateNTDD}$, $T_{measureTDD}$, $T_{evaluateTDD}$, $T_{measureFDD}$, $T_{evaluateFDD}$ and $T_{measureGSM}$

DRX cycle length [s]	N_{serv} (number of DRX cycles)	$T_{measureNTDD}$ [s] (number of DRX cycles)	$T_{evaluateNTDD}$ [s] (number of DRX cycles)	$T_{measureTDD}$ [s] (number of DRX cycles)	$T_{evaluateTDD}$ [s] (number of DRX cycles)	$T_{measureFDD}$ [s] (number of DRX cycles)	$T_{evaluateFDD}$ [s] (number of DRX cycles)	$T_{measureGSM}$ [s] (number of DRX cycles)
0.08	4	0.64 (8 DRX cycles)	2.56 (32 DRX cycles)	0.64 (8 DRX cycles)	2.56 (32 DRX cycles)	0.64 (8 DRX cycles)	2.56 (32 DRX cycles)	2.56 (32 DRX cycles)
0.16	4	0.64 (4)	2.56 (16)	0.64 (4)	2.56 (16)	0.64 (4)	2.56 (16)	2.56 (16)
0.32	4	1.28 (4)	5.12 (16)	1.28 (4)	5.12 (16)	1.28 (4)	5.12 (16)	5.12 (16)
0.64	4	1.28 (2)	5.12 (8)	1.28 (2)	5.12 (8)	1.28 (2)	5.12 (8)	5.12 (8)
1.28	2	1.28 (1)	6.4 (5)	1.28 (1)	6.4 (5)	1.28 (1)	6.4 (5)	6.4 (5)
2.56	2	2.56 (1)	7.68 (3)	2.56 (1)	7.68 (3)	2.56 (1)	7.68 (3)	7.68 (3)
5.12	1	5.12 (1)	10.24 (2)	5.12 (1)	10.24 (2)	5.12 (1)	10.24 (2)	10.24 (2)

Table 4.2A: $T_{measureE\text{-}UTRA}$ and $T_{evaluateEUTRA}$

DRX cycle length [s]	$T_{measureE\text{-}UTRA}$ [s] (number of DRX cycles)	$T_{evaluateEUTRA}$ [s] (number of DRX cycles)
0.08	[2.56 (32)]	[7.68 (96)]
0.16	[[2.56 (16)]	[7.68 (48)]
0.32	[5.12 (16)]	[15.36 (48)]
0.64	[5.12 (8)]	[15.36 (24)]
1.28	[6.4 (5)]	[19.2 (15)]
2.56	[7.68 (3)]	[23.04 (9)]
5.12	[10.24 (2)]	[30.72 (6)]

In idle mode, UE shall support DRX cycles lengths 0.64, 1.28, 2.56 and 5.12 s.

4.2.2.7.3 7.68 Mcps option

UE shall perform the cell re-selection with minimum interruption in monitoring downlink channels for paging reception.

At intra-frequency cell re-selection, the UE shall monitor the downlink of current serving cell for paging reception until the UE is capable to start monitoring downlink channels of the target intra-frequency cell for paging reception. The interruption time shall not exceed 50 ms.

At inter-frequency and inter-RAT cell re-selection, the UE shall monitor the downlink of current serving cell for paging reception until the UE is capable to start monitoring downlink channels for paging reception of the target inter-

frequency cell. For inter-frequency cell re-selection, the interruption time shall not exceed T_{SI} + 50 ms. For inter-RAT cell re-selection the interruption time shall not exceed T_{BCCH} + 50 ms for GSM or $T_{SI\ EUTRA}$ + [50ms] for E-UTRA.

T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in [16] for a UTRAN cell.

T_{BCCH} is the maximum time allowed to read BCCH data from a GSM cell as defined in [21].

$T_{SI\text{-}EUTRA}$ is the maximum time allowed to read system information from a E-UTRA cell [24].

These requirements assume sufficient radio conditions, so that decoding of system information can be made without errors.

Table 4.1B: $T_{measureTDD}$, $T_{evaluateTDD}$, $T_{measureNTDD}$, $T_{evaluateNTDD}$, $T_{measureFDD}$, $T_{evaluateFDD}$ and $T_{measureGSM}$

DRX cycle length [s]	N_{serv} (number of DRX cycles)	$T_{measureTDD}$ [s] (number of DRX cycles)	$T_{evaluateTDD}$ [s] (number of DRX cycles)	$T_{measureNTDD}$ [s] (number of DRX cycles)	$T_{evaluateNTDD}$ [s] (number of DRX cycles)	$T_{measureFDD}$ [s] (number of DRX cycles)	$T_{evaluateFDD}$ [s] (number of DRX cycles)	$T_{measureGSM}$ [s] (number of DRX cycles)
0.08	4	0.64 (8 DRX cycles)	2.56 (32 DRX cycles)	0.64 (8 DRX cycles)	2.56 (32 DRX cycles)	0.64 (8 DRX cycles)	2.56 (32 DRX cycles)	2.56 (32 DRX cycles)
0.16	4	0.64 (4)	2.56 (16)	0.64 (4)	2.56 (16)	0.64 (4)	2.56 (16)	2.56 (16)
0.32	4	1.28 (4)	5.12 (16)	1.28 (4)	5.12 (16)	1.28 (4)	5.12 (16)	5.12 (16)
0.64	4	1.28 (2)	5.12 (8)	1.28 (2)	5.12 (8)	1.28 (2)	5.12 (8)	5.12 (8)
1.28	2	1.28 (1)	6.4 (5)	1.28 (1)	6.4 (5)	1.28 (1)	6.4 (5)	6.4 (5)
2.56	2	2.56 (1)	7.68 (3)	2.56 (1)	7.68 (3)	2.56 (1)	7.68 (3)	7.68 (3)
5.12	1	5.12 (1)	10.24 (2)	5.12 (1)	10.24 (2)	5.12 (1)	10.24 (2)	10.24 (2)

Table 4.2B: $T_{measureE\text{-}UTRA}$ and $T_{evaluateEUTRA}$

DRX cycle length [s]	$T_{measureE\text{-}UTRA}$ [s] (number of DRX cycles)	$T_{evaluateEUTRA}$ [s] (number of DRX cycles)
0.08	[2.56 (32)]	[7.68 (96)]
0.16	[[2.56 (16)]	[7.68 (48)]
0.32	[5.12 (16)]	[15.36 (48)]
0.64	[5.12 (8)]	[15.36 (24)]
1.28	[6.4 (5)]	[19.2 (15)]
2.56	[7.68 (3)]	[23.04 (9)]
5.12	[10.24 (2)]	[30.72 (6)]

In idle mode, UE shall support DRX cycles lengths 0.64, 1.28, 2.56 and 5.12 s, according to [16].

4.2.2.8 Number of cells in cell lists

4.2.2.8.1 3.84 Mcps option

For idle mode cell re-selection purposes, the UE shall be capable of monitoring:

- 32 intra-frequency cells (including serving cell), and
- 32 inter-frequency cells, including
 - TDD mode cells on maximum 2 additional TDD carriers, and
 - Depending on UE capability, FDD mode cells, distributed on up to 3 FDD carriers, and
- Depending on UE capability, 32 inter RAT GSM cells,
- Depending on UE capability, [32] E-UTRA cells distributed on up to [TBD] E-UTRA carriers,

as indicated in cell information lists sent in system information (BCCH).

4.2.2.8.2 1.28 Mcps option

For idle mode cell re-selection purposes, the UE shall be capable of monitoring:

- 32 intra-frequency cells (including serving cell), and
- 32 inter-frequency cells, including
 - TDD mode cells on up to minimum 8 additional TDD carriers, and
 - Depending on UE capability, FDD mode cells distributed on up to 3 FDD carriers, and
- Depending on UE capability, 32 GSM cells distributed on up to 32 GSM carriers,
- Depending on UE capability, [32] E-UTRA cells distributed on up to [TBD] E-UTRA carriers,

as indicated in cell information lists sent in system information (BCCH).

4.2.2.8.3 7.68 Mcps option

For idle mode cell re-selection purposes, the UE shall be capable of monitoring:

- 32 intra-frequency cells (including serving cell), and
- 32 inter-frequency cells, including
 - TDD mode cells on maximum 2 additional TDD carriers, and
 - Depending on UE capability, FDD mode cells, distributed on up to 3 FDD carriers, and
- Depending on UE capability, 32 inter RAT GSM cells,
- Depending on UE capability, [32] E-UTRA cells distributed on up to [TBD] E-UTRA carriers,

as indicated in cell information lists sent in system information (BCCH).

4.2.2.9 Additional requirements for inter-frequency measurements when MBMS reception is active

4.2.2.9.1 3.84 Mcps option

For MBMS capable UE, when MBMS reception is active the following requirements shall apply:

If the UE is required to perform inter-frequency measurements as indicated by the cell reselection measurement rules in 25.304, the UE shall ensure that it switches back to its serving cell frequency in time to perform demodulation of MTCH signals.

4.2.2.9.2 (void)

4.2.2.9.3 7.68 Mcps option

For MBMS capable UE, when MBMS reception is active the following requirements shall apply:

If the UE is required to perform inter-frequency measurements as indicated by the cell reselection measurement rules in 25.304, the UE shall ensure that it switches back to its serving cell frequency in time to perform demodulation of MTCH signals.

4.3 MBSFN cluster selection for carriers dedicated to MBSFN

4.3.1 Introduction

UEs supporting MBSFN services may search for and select an appropriate MBSFN cluster according to [18]. No test requirements are specified.

4.4 MBSFN cluster reselection for carriers dedicated to MBSFN

4.4.1 Introduction

UEs supporting MBSFN services employ MBSFN cluster reselection procedures in order to identify and select a more suitable MBSFN cluster on which to camp on (and to possibly receive service from) according to [18]. No test requirements are specified.

5 UTRAN Connected Mode Mobility

This section contains the requirements on the mobility procedures in UTRAN connected mode such as handover and cell re-selection.

Requirements related to the measurements in support of the execution of the UTRAN connected mode mobility procedures are specified in section 8.

The radio links the UE shall use are controlled by UTRAN with RRC signalling.

UE behaviour in response to UTRAN RRC messages is described in [16].

The purpose of Cell reselection in CELL_FACH, CELL_PCH and URA_PCH states is that the UE shall select a better cell according to the cell reselection criteria in [18]. CELL_FACH, CELL_PCH and URA_PCH states are described in [16].

5.1 TDD/TDD Handover

5.1.1 Introduction

5.1.1.1 3.84 Mcps TDD option

The TDD/TDD handover procedure is initiated from UTRAN with a RRC message that implies a hard handover as described in [16].

The TDD/TDD handover procedure may cause the UE to change its frequency.

5.1.1.2 1.28 Mcps TDD option

The purpose of TDD/TDD handover is to change the cell of the connection between UE and UTRAN. The handover procedure is initiated from UTRAN with a RRC message that implies a handover, refer to [16].The handover procedure may cause the UE to change its frequency.

In the case of multi-frequency network, handover can occure between primary frequency in serving cell and primary frequency in target cell, primary frequency in serving cell and secondary frequency in target cell, secondary frequency in serving cell and primary frequency cell in target cell.

5.1.1.3 7.68 Mcps TDD option

The TDD/TDD handover procedure is initiated from UTRAN with a RRC message that implies a hard handover as described in [16].

The TDD/TDD handover procedure may cause the UE to change its frequency.

5.1.2 Requirements

5.1.2.1 TDD/TDD handover delay

5.1.2.1.1 3.84 Mcps TDD option

RRC procedure performance values for all RRC procedures that can command a hard handover are specified in [16].

When the UE receives a RRC message implying TDD/TDD handover with the activation time "now" or earlier than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCH within $D_{handover}$ seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCH at the designated activation time + interruption time.

where:

$D_{handover}$ equals the RRC procedure performance value defined in [16] plus the interruption time stated in section 5.1.2.2.1.

5.1.2.1.2 1.28 Mcps TDD option

RRC procedure performance values for all RRC procedures that can command a hard handover are specified in [16].

When the UE receives a RRC message that implies a TDD/TDD handover, with the activation time "now" or earlier than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall start transmission within $D_{handover}$ seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCH or the SYNC-UL in case that a handover to 1.28 Mcps TDD option with SYNCH uplink exchange is recommended at the designated activation time + interruption time.

where $D_{handover}$ equals the RRC procedure performance value defined [16] plus the interruption time stated in section 5.1.2.2.2.

5.1.2.1.3 7.68 Mcps TDD option

RRC procedure performance values for all RRC procedures that can command a hard handover are specified in [16].

When the UE receives a RRC message implying TDD/TDD handover with the activation time "now" or earlier than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCH within $D_{handover}$ seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCH at the designated activation time + interruption time.

where:

- $D_{handover}$ equals the RRC procedure performance value defined in [16] plus the interruption time stated in section 5.1.2.2.3.

5.1.2.2 Interruption time

5.1.2.2.1 3.84 Mcps TDD option

The interruption time i.e. the time between the end of the last TTI containing a transport block on the old DPCH and the time the UE starts transmission of the new uplink DPCH, is dependent on whether the target cell is known for the UE or not.

If TDD/TDD intra-frequency or inter-frequency handover is commanded, the interruption time shall be less than,

$$T_{interrupt} = T_{offset} + T_{UL} + 30*F_{SFN} + 20*KC + 180*UC + 10*F_{max} \text{ ms}$$

where,

T_{offset}	Equal to 10 ms, the frame timing uncertainty between the old cell and the target cell and the time that can elapse until the appearance of a Beacon channel
T_{UL}	Equal to 10 ms, the time that can elapse until the appearance of the UL timeslot in the target cell
F_{SFN}	Equal to 1 if SFN decoding is required and equal to 0 otherwise
KC	Equal to 1 if a known target cell is indicated in the RRC message implying TDD/TDD handover and equal to 0 otherwise
UC	Equal to 1 if an unknown target cell is indicated in the RRC message implying TDD/TDD handover and equal to 0 otherwise
F_{max}	denotes the maximum number of radio frames within the transmission time intervals of all transport channels that are multiplexed into the same CCTrCH.

An intra-frequency or inter-frequency TDD target cell shall be considered as known by the UE, if either or both of the following conditions are true:

- the target cell has been measured during the last 5 seconds
- the UE has had a radio link connected to the target cell during the last 5 seconds.

The interruption time requirements for an unknown target cell shall apply only if the signal quality of the unknown target cell is sufficient for successful synchronisation with one attempt.

5.1.2.2.2 1.28 Mcps TDD option

The interruption time i.e. the time between the end of the last TTI containing a transport block on the old DPCH and the time the UE starts transmission of the new uplink DPCH or the SYNC-UL in case that a handover with SYNCH uplink exchange is recommended, shall be less than the value defined in the equation below. There is different requirement on the interruption time depending on if the cell is known or not and if the SFN of the target cell has to be decoded by the UE or not.

If TDD/TDD intra-frequency or inter-frequency handover is commanded, the interruption time shall be less than,

$$T_{interrupt} = T_{offset} + T_{UL} + 30*F_{SFN} + 20*KC + 180*UC + 10*F_{max} \text{ ms}$$

where,

T_{offset}	Equal to 10 ms, the frame timing uncertainty between the old cell and the target cell and the time that can elapse until the appearance of a Beacon channel
T_{UL}	Equal to 10 ms, the time that can elapse until the appearance of the UL timeslot in the target cell
F_{SFN}	Equal to 1 if SFN decoding is required and equal to 0 otherwise
KC	Equal to 1 if a known target cell is indicated in the RRC message implying TDD/TDD handover and equal to 0 otherwise
UC	Equal to 1 if an unknown target cell is indicated in the RRC message implying TDD/TDD handover and equal to 0 otherwise

F_{max} denotes the maximum number of radio frames within the transmission time intervals of all transport channels that are multiplexed into the same CCTrCH.

A cell shall be regarded as known by the UE if either or both of the following conditions are true:

- it has been measured during the last 5 seconds or
- a dedicated connection existed between the UE and the cell during the last 5 seconds.

The SFN of the target cell needs not to be decoded by the UE if either or both of the following conditions are true:

- a handover with timing maintain is commanded by the UTRAN or
- the SFN of the target cell is known by the UE.

The interruption time requirement for the cell shall apply if the signal quality of the unknown cell is good enough for successful synchronisation with one attempt.

5.1.2.2.3 7.68 Mcps TDD option

The interruption time i.e. the time between the end of the last TTI containing a transport block on the old DPCH and the time the UE starts transmission of the new uplink DPCH, is dependent on whether the target cell is known for the UE or not.

If TDD/TDD intra-frequency or inter-frequency handover is commanded, the interruption time shall be less than,

$$T_{interrupt} = T_{offset} + T_{UL} + 30*F_{SFN} + 20*KC + 180*UC + 10*F_{max} \text{ ms}$$

where,

T_{offset} Equal to 10 ms, the frame timing uncertainty between the old cell and the target cell and the time that can elapse until the appearance of a Beacon channel

T_{UL} Equal to 10 ms, the time that can elapse until the appearance of the UL timeslot in the target cell

F_{SFN} Equal to 1 if SFN decoding is required and equal to 0 otherwise

KC Equal to 1 if a known target cell is indicated in the RRC message implying TDD/TDD handover and equal to 0 otherwise

UC Equal to 1 if an unknown target cell is indicated in the RRC message implying TDD/TDD handover and equal to 0 otherwise

F_{max} denotes the maximum number of radio frames within the transmission time intervals of all transport channels that are multiplexed into the same CCTrCH.

An intra-frequency or inter-frequency TDD target cell shall be considered as known by the UE, if either or both of the following conditions are true:

- the target cell has been measured during the last 5 seconds
- the UE has had a radio link connected to the target cell during the last 5 seconds.

The interruption time requirements for an unknown target cell shall apply only if the signal quality of the unknown target cell is sufficient for successful synchronisation with one attempt.

5.2 TDD/FDD Handover

5.2.1 Introduction

5.2.1.1 3.84 Mcps TDD option

The purpose of TDD/FDD handover is to change the radio access mode from TDD to FDD. The TDD/FDD handover procedure is initiated from UTRAN with a RRC message that implies a hard handover as described in [16].

5.2.1.2 1.28 Mcps TDD option

The purpose of TDD/FDD handover is to change the radio access mode from TDD to FDD.

The TDD/FDD handover procedure is initiated from UTRAN with a RRC message that implies a hard handover as described in [16]

5.2.1.3 7.68 Mcps TDD option

The purpose of TDD/FDD handover is to change the radio access mode from TDD to FDD. The TDD/FDD handover procedure is initiated from UTRAN with a RRC message that implies a hard handover as described in [16].

5.2.2 Requirements

The requirements in this section shall apply to UE supporting TDD and FDD.

5.2.2.1 TDD/FDD handover delay

5.2.2.1.1 3.84 Mcps TDD option

RRC procedure performance values for all RRC procedures that can command a hard handover, are specified in [16].

When the UE receives a RRC message implying TDD/FDD handover with the activation time "now" or earlier than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCCH within RRC procedure delay seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than $D_{handover}$ seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCCH at the designated activation time + interruption time.

where:

$D_{handover}$ equals the RRC procedure performance value as defined in [16] plus the interruption time stated in section 5.2.2.2.

5.2.2.1.2 1.28 Mcps TDD option

RRC procedure performance values for all RRC procedures that can command a hard handover, are specified in [16].

When the UE receives a RRC message that implies a TDD/FDD handover, with the activation time "now" or earlier than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCCH within $D_{handover}$ seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCCH at the designated activation time + interruption time.

$D_{handover}$ equals the RRC procedure performance value defined in [16] plus the interruption time stated in section 5.2.2.2.2.

5.2.2.1.3 7.68 Mcps TDD option

RRC procedure performance values for all RRC procedures that can command a hard handover, are specified in [16].

When the UE receives a RRC message implying TDD/FDD handover with the activation time "now" or earlier than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCCH within RRC procedure delay seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than $D_{handover}$ seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCCH at the designated activation time + interruption time.

where:

- $D_{handover}$ equals the RRC procedure performance value as defined in [16] plus the interruption time stated in section 5.2.2.2.3.

5.2.2.2 Interruption time

5.2.2.2.1 3.84 Mcps TDD option

The interruption time, i.e. the time between the end of the last TTI containing a transport block on the old DPCH and the time the UE starts transmission of the new uplink DPCCH, is dependent on whether the target cell is known for the UE or not.

If TDD/FDD handover is commanded, the interruption time shall be less than,

$$T_{interrupt} = T_{offset} + 40 + 50*KC + 150*UC + 10*F_{max} \text{ ms}$$

where,

T_{offset}	Equal to 10 ms, the frame timing uncertainty between the old cell and the target cell.
KC	Equal to 1 if a known target cell is indicated in the RRC message implying TDD/FDD handover and equal to 0 otherwise
UC	Equal to 1 if an unknown target cell is indicated in the RRC message implying TDD/FDD handover and equal to 0 otherwise
F_{max}	denotes the maximum number of radio frames within the transmission time intervals of all transport channels that are multiplexed into the same CCTrCH.

An inter-frequency FDD target cell shall be considered known by the UE, if the target cell has been measured by the UE during the last 5 seconds.

The phase reference is the Primary CPICH.

The interruption time requirements for an unknown target cell shall apply only if the signal quality of the unknown target cell is sufficient for successful synchronisation with one attempt.

Note that the requirements in this section assume that N312 has the smallest possible value, i.e. only one in-sync indication as described in [23] is required.

5.2.2.2.2 1.28 Mcps TDD option

The interruption time, i.e. the time between the end of the last TTI containing a transport block on the old DPCH and the time the UE starts transmission of the new uplink DPCCH, is dependent on whether the target cell is known for the UE or not.

If TDD/FDD handover is commanded, the interruption time shall be less than,

$$T_{interrupt} = T_{IU} + 40 + 50*KC + 150*UC + 10*F_{max} \text{ ms}$$

where,

T_{IU}	The interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).
KC	Equal to 1 if a known target cell is indicated in the RRC message implying 1.28Mcps TDD/FDD handover and equal to 0 otherwise.
UC	Equal to 1 if an unknown target cell is indicated in the RRC message implying 1.28Mcps TDD/FDD handover and equal to 0 otherwise.

F_{max} denotes the maximum number of radio frames within the transmission time intervals of all transport channels that are multiplexed into the same CCTrCH.

An inter-frequency FDD target cell shall be considered known by the UE, if the target cell has been measured by the UE during the last 5 seconds.

The phase reference is the Primary CPICH.

The interruption time requirements for an unknown target cell shall apply only if the signal quality of the unknown target cell is sufficient for successful synchronisation with one attempt.

Note that the requirements in this section assume that N312 has the smallest possible value, i.e. only one in-sync indication as described in [23] is required.

5.2.2.2.3 7.68 Mcps TDD option

The interruption time, i.e. the time between the end of the last TTI containing a transport block on the old DPCH and the time the UE starts transmission of the new uplink DPCCH, is dependent on whether the target cell is known for the UE or not.

If TDD/FDD handover is commanded, the interruption time shall be less than,

$$T_{interrupt} = T_{offset} + 40 + 50*KC + 150*UC + 10*F_{max} \text{ ms}$$

where,

T_{offset} Equal to 10 ms, the frame timing uncertainty between the old cell and the target cell.

KC Equal to 1 if a known target cell is indicated in the RRC message implying TDD/FDD handover and equal to 0 otherwise

UC Equal to 1 if an unknown target cell is indicated in the RRC message implying TDD/FDD handover and equal to 0 otherwise

F_{max} denotes the maximum number of radio frames within the transmission time intervals of all transport channels that are multiplexed into the same CCTrCH.

An inter-frequency FDD target cell shall be considered known by the UE, if the target cell has been measured by the UE during the last 5 seconds.

The phase reference is the Primary CPICH.

The interruption time requirements for an unknown target cell shall apply only if the signal quality of the unknown target cell is sufficient for successful synchronisation with one attempt.

Note that the requirements in this section assume that N312 has the smallest possible value, i.e. only one in-sync indication as described in [23] is required.

5.3 TDD/GSM Handover

5.3.1 Introduction

5.3.1.1 3.84 Mcps TDD option

The purpose of inter-RAT handover from UTRAN TDD to GSM is to transfer a connection between the UE and UTRAN TDD to GSM. The handover procedure is initiated from UTRAN with a RRC message (HANDOVER FROM UTRAN COMMAND) as described in [16].

5.3.1.2 1.28 Mcps TDD option

The purpose of inter-RAT handover from UTRAN TDD to GSM is to transfer a connection between the UE and UTRAN TDD to GSM. The handover procedure is initiated from UTRAN with a RRC message (HANDOVER FROM UTRAN COMMAND). The procedure is described in [16]

5.3.1.3 7.68 Mcps TDD option

The purpose of inter-RAT handover from UTRAN TDD to GSM is to transfer a connection between the UE and UTRAN TDD to GSM. The handover procedure is initiated from UTRAN with a RRC message (HANDOVER FROM UTRAN COMMAND) as described in [16].

5.3.2 Requirements

The requirements in this section shall apply to UE supporting TDD and GSM.

5.3.2.1 TDD/GSM handover delay

5.3.2.1.1 3.84 Mcps TDD option

The RRC procedure performance value for the RRC HANDOVER FROM UTRAN COMMAND shall be 50 ms.

If the activation time is used in the RRC HANDOVER FROM UTRAN COMMAND, it corresponds to the CFN of the UTRAN channel.

When the UE receives a RRC HANDOVER FROM UTRAN COMMAND with the activation time "now" or earlier than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to transmit as specified [22] on the new channel of the new RAT within $D_{handover}$ seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to transmit as specified in [22] on the new channel of the new RAT at the designated activation time + interruption time.

$D_{handover}$ equals the RRC procedure performance value plus the interruption time stated in section 5.3.2.2.

5.3.2.1.2 1.28 Mcps TDD option

The RRC procedure performance value for the RRC HANDOVER FROM UTRAN COMMAND shall be within 50 ms.

If the activation time is used in the RRC HANDOVER FROM UTRAN COMMAND, it corresponds to the CFN of the UTRAN channel.

When the UE receives a RRC HANDOVER FROM UTRAN COMMAND with the activation time "now" or earlier than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to transmit as specified in [22] on the new channel within the new RAT within $D_{handover}$ seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to transmit as specified in [22] on the new channel of the new RAT at the designated activation time + interruption time.

$D_{handover}$ equals the RRC procedure performance value (50 ms) plus the interruption time stated in section 5.3.2.2.

5.3.2.1.3 7.68 Mcps TDD option

The RRC procedure performance value for the RRC HANDOVER FROM UTRAN COMMAND shall be 50 ms.

If the activation time is used in the RRC HANDOVER FROM UTRAN COMMAND, it corresponds to the CFN of the UTRAN channel.

When the UE receives a RRC HANDOVER FROM UTRAN COMMAND with the activation time "now" or earlier than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to transmit as specified [22] on the new channel of the new RAT within $D_{handover}$ seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to transmit as specified in [22] on the new channel of the new RAT at the designated activation time + interruption time.

$D_{handover}$ equals the RRC procedure performance value plus the interruption time stated in section 5.3.2.2.

5.3.2.2 Interruption time

5.3.2.2.1 3.84 Mcps TDD option

The interruption time, i.e. the time between the end of the last TTI containing a transport block on the old DPCH and the time the UE is ready to transmit on the new channel of the new RAT, is dependent on whether the UE has synchonised to the target cell or not before receiving the RRC HANDOVER FROM UTRAN COMMAND.

The interruption time for the purpose of TDD/GSM handover shall be less than the value in Table 5.4.

Table 5.4: TDD/GSM interruption time

Synchronisation status	Interruption time [ms]
The UE has synchronised to the GSM cell before the HANDOVER FROM UTRAN COMMAND is received	40
The UE has not synchronised to the GSM cell before the HANDOVER FROM UTRAN COMMAND is received	140

The requirements in Table 5.4 for the case where the UE has not synchronised to the GSM target cell before receiving the RRC HANDOVER FROM UTRAN COMMAND shall apply only if the signal quality of the GSM target cell is sufficient for successful synchronisation with one attempt.

If the UE is unable to synchronise to the GSM cell on the first attempt, it shall continue to search for synchronisation information for up to 800 ms. If after 800 ms the UE has not synchronised to the GSM cell it shall follow the handover failure procedure specified in [16].

5.3.2.2.2 1.28 Mcps TDD option

The interruption time, i.e. the time between the end of last TTI containing a transport block on the old DPCH and the time the UE is ready to transmit on the new channel of the new RAT, is dependent on whether the UE has synchonised to the target cell or not before receiving the RRC HANDOVER FROM UTRAN COMMAND.

The interruption time for the purpose of TDD/GSM handover shall be less than the value in Table 5.4A.

Table 5.4A: TDD/GSM interruption time

Synchronisation status	Interruption time [ms]
The UE has synchronised to the GSM cell before the HANDOVER FROM UTRAN COMMAND is received	40
The UE has not synchronised to the GSM cell before the HANDOVER FROM UTRAN COMMAND is received	140

The requirements in Table 5.4A for the case where the UE has not synchronised to the GSM target cell before receiving the RRC HANDOVER FROM UTRAN COMMAND shall apply only if the signal quality of the GSM target cell is sufficient for successful synchronisation with one attempt.

If the UE is unable to synchronise to the GSM cell on the first attempt, it shall continue to search for synchronisation information for up to 800 ms. If after 800 ms the UE has not synchronised to the GSM cell it shall follow the handover failure procedure specified in [16].

5.3.2.2.3 7.68 Mcps TDD option

The interruption time, i.e. the time between the end of the last TTI containing a transport block on the old DPCH and the time the UE is ready to transmit on the new channel of the new RAT, is dependent on whether the UE has synchonised to the target cell or not before receiving the RRC HANDOVER FROM UTRAN COMMAND.

The interruption time for the purpose of TDD/GSM handover shall be less than the value in Table 5.4B.

Table 5.4B: TDD/GSM interruption time

Synchronisation status	Interruption time [ms]
The UE has synchronised to the GSM cell before the HANDOVER FROM UTRAN COMMAND is received	40
The UE has not synchronised to the GSM cell before the HANDOVER FROM UTRAN COMMAND is received	140

The requirements in Table 5.4B for the case where the UE has not synchronised to the GSM target cell before receiving the RRC HANDOVER FROM UTRAN COMMAND shall apply only if the signal quality of the GSM target cell is sufficient for successful synchronisation with one attempt.

If the UE is unable to synchronise to the GSM cell on the first attempt, it shall continue to search for synchronisation information for up to 800 ms. If after 800 ms the UE has not synchronised to the GSM cell it shall follow the handover failure procedure specified in [16].

5.3a TDD to E-UTRAN FDD Handover

5.3a.1 Introduction

The purpose of inter-RAT handover from UTRAN TDD to E-UTRAN FDD is to transfer a connection between the UE and UTRAN TDD to E-UTRAN FDD. The handover procedure is initiated from UTRAN with a RRC message (HANDOVER FROM UTRAN COMMAND). The procedure is described in TS 25.331.

5.3a.2 Requirements

The requirements in this section shall apply to UE supporting TDD and E-UTRAN FDD.

5.3a.2.1 Handover delay

When the UE receives a RRC HANDOVER FROM UTRAN COMMAND message with activation time "now" or earlier than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink PRACH channel within $D_{handover}$ seconds from the end of the last TTI containing the RRC command, where:

- $D_{handover}$ equals the maximum RRC procedure delay defined plus the interruption time stated in section 5.3a.2.2.

The UE shall process the RRC procedures for the RRC HANDOVER FROM UTRAN COMMAND within [50] ms, which is noted as RRC procedure delay.

If the access is delayed to an indicated activation time later than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink PRACH channel at the designated activation time + interruption time.

5.3a.2.2 Interruption time

The interruption time is the time between end of the last TTI in which the UE has received the handover command and the time the UE starts transmission of the PRACH in the new E-UTRA cell, excluding the RRC procedure delay. This requirement applies when UE is not required to perform any synchronisation procedure before transmitting on the new PRACH.

When inter-RAT handover to E-UTRAN is commanded, the interruption time shall be less than $T_{interrupt}$:

$T_{interrupt} = T_{search} + T_{IU} + 20$ ms

where

T_{search} is the time required to search the target cell when the target cell is not already known when the handover command is received by the UE. If the target cell is known, then $T_{search} = 0$ ms.

T_{IU} is the interruption uncertainty in acquiring the first available PRACH occasion in the new cell. T_{IU} can be up to 30 ms.

NOTE: The actual value of T_{IU} shall depend upon the PRACH configuration used in the target cell.

In the interruption requirement a cell is known if it has been meeting the relevant cell identification requirement during the last 5 seconds otherwise it is unknown. Relevant cell identification requirements are described in Section 8.1.2.7.1 for 3.84 Mcps TDD option and Section 8.1A.2.6.1 for 1.28 Mcps TDD option and Section 8.1B.2.7.1 for 7.68 Mcps TDD option.

5.3b TDD to E-UTRAN TDD Handover

5.3b.1 Introduction

The purpose of inter-RAT handover from UTRAN TDD to E-UTRAN TDD is to transfer a connection between the UE and UTRAN TDD to E-UTRAN TDD. The handover procedure is initiated from UTRAN with a RRC message (HANDOVER FROM UTRAN COMMAND). The procedure is described in TS 25.331.

5.3b.2 Requirements

The requirements in this section shall apply to UE supporting TDD and E-UTRAN TDD.

5.3b.2.1 Handover delay

When the UE receives a RRC HANDOVER FROM UTRAN COMMAND message with activation time "now" or earlier than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink UpPTS or PRACH channel within $D_{handover}$ seconds from the end of the last TTI containing the RRC command, where:

- $D_{handover}$ equals the maximum RRC procedure delay defined plus the interruption time stated in section 5.3b.2.2.

The UE shall process the RRC procedures for the RRC HANDOVER FROM UTRAN COMMAND within [50] ms, which is noted as RRC procedure delay.

If the access is delayed to an indicated activation time later than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink [TBD] channel at the designated activation time + interruption time.

5.3b.2.2 Interruption time

The interruption time is the time between end of the last TTI in which the UE has received the handover command and the time the UE starts transmission of the UpPTS or PRACH in the new E-UTRA cell, excluding the RRC procedure delay. This requirement applies when UE is not required to perform any synchronisation procedure before transmitting on the new UpPTS or PRACH.

When inter-RAT handover to E-UTRAN is commanded, the interruption time shall be less than $T_{interrupt}$:

$T_{interrupt} = T_{search} + T_{IU} + 20$ ms

where

T_{search} is the time required to search the target cell when the target cell is not already known when the handover command is received by the UE. If the target cell is known, then $T_{search} = 0$ ms.

T_{IU} is the interruption uncertainty in acquiring the first available UpPTS or PRACH occasion in the new cell. T_{IU} can be up to 30 ms.

NOTE: The actual value of T_{IU} shall depend upon the PRACH configuration used in the target cell.

In the interruption requirement a cell is known if it has been meeting the relevant cell identification requirement during the last 5 seconds otherwise it is unknown. Relevant cell identification requirements are described in Section 8.1.2.8.1 for 3.84 Mcps TDD option and Section 8.1A.2.7.1 for 1.28 Mcps TDD option and Section 8.1B.2.8.1 for 7.68 Mcps TDD option.

5.4 Cell Re-selection in Cell_FACH

5.4.1 Introduction

The UE shall evaluate the cell re-selection criteria specified in [18], based on radio measurements, and if a better ranked cell is found that cell is selected.

5.4.2 Requirements for 3.84Mcps TDD option

The cell re-selection delays specified below are applicable when the RRC parameter $T_{reselection}$ is set to 0. Otherwise the Cell reselection delay is increased by $T_{reselection}$ s.

P-CCPCH RSCP shall be used for cell reselection in Cell-FACH state to another TDD cell, CPICH Ec/Io and CPICH RSCP shall be used for cell re-selection to a FDD cell and GSM carrier RSSI shall be used for cell re-selection to a GSM cell. The accuracies of the measurements used for cell re-selection in an AWGN environment shall comply with the requirements in chapter 9. The measurements used for S-criteria and cell re-selection evaluation in CELL_FACH state shall be performed according to section 8.4.

5.4.2.1 Cell re-selection delay

For UTRA TDD, the cell re-selection delay is defined as the time between the occurrence of an event which will trigger the cell re-selection process and the moment in time when the UE starts sending the RRC CELL UPDATE message to the UTRAN on RACH.

For UTRA FDD, the cell re-selection delay is defined as the time between the occurrence of an event which will trigger the cell re-selection process and the moment in time when the UE starts sending the the preambles on the PRACH for sending RRC CELL UPDATE message to the UTRAN.

For GSM, the cell re-selection delay is defined as the time between the occurrence of an event which will trigger Cell Reselection process and the moment in time when the UE starts sending the random access in the target cell of the new RAT.

These requirements assume radio conditions to be sufficient, so that reading of system information can be done without errors.

5.4.2.1.1 Intra-frequency cell re-selection

The cell re-selection delay in CELL_FACH state for intra frequency TDD cells shall be less than:

$$T_{reselection,\,intra} = T_{identify,\,intra} + T_{IU} + 20 + T_{SI} + T_{RA} \text{ ms}$$

where

$T_{identify,\,intra}$ is specified in 8.4.2.2.1.

T_{IU} is the interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).

T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16] for a UTRAN cell.

T_{RA} is the additional delay caused by the random access procedure.

If a cell has been detectable at least $T_{identify,intra}$, the cell re-selection delay in CELL_FACH state to an intra-frequency TDD cell shall be less than,

$$T_{reselection,\,intra} = T_{measurement\ period,\,intra} + T_{IU} + 20 + T_{SI} + T_{RA}\ \text{ms}$$

where

$T_{measurement\ period\ intra}$ is specified in 8.4.2.2.2.

5.4.2.1.2 Inter-frequency cell re-selection

The cell re-selection delay in CELL_FACH state for inter-frequency TDD cells shall be less than:

$$T_{reselection,\ inter} = T_{identify,\ inter} + T_{IU} + 20 + T_{SI} + T_{RA}\ \text{ms}$$

where

$T_{identify,\ inter}$ is specified in 8.4.2.3.1.

T_{IU} is the interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).

T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16] for a UTRAN cell.

T_{RA} is the additional delay caused by the random access procedure.

If a cell has been detectable at least $T_{identify,inter}$, the cell re-selection delay in CELL_FACH state to an inter-frequency TDD cell shall be less than,

$$T_{reselection,\,inter} = T_{measurement\ inter} + T_{IU} + 20 + T_{SI} + T_{RA}\ \text{ms}$$

where

$T_{measurement\ inter}$ is specified in 8.4.2.3.2.

5.4.2.1.3 TDD FDD cell re-selection

The requirements in this section shall apply to UE supporting TDD and FDD.

The cell re-selection delay in CELL_FACH state to an inter-frequency FDD cells shall be less than:

$$T_{reselection,\,FDD} = T_{identify\ FDD\ inter} + T_{IU} + 20 + T_{SI} + T_{RA}\ \text{ms}$$

where

$T_{identify,\ FDD}$ is specified in 8.4.2.4.1

T_{IU} is the interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).

T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16] for a UTRAN cell.

T_{RA} is the additional delay caused by the random access procedure.

If a cell has been detectable at least $T_{identify\ FDD\ inter}$, the cell re-selection delay in CELL_FACH state to an inter-frequency FDD cell shall be less than,

$$T_{reselection,\ FDD} = T_{measurement\ FDD\ inter} + T_{IU} + 20 + T_{SI} + T_{RA}\ ms$$

where

$T_{measurement\ FDD\ inter}$ is specified in 8.4.2.4.1.

5.4.2.1.4 Inter-RAT cell re-selection

The requirements in this section shall apply to UE supporting TDD and GSM.

The cell re-selection delay in CELL_FACH state for inter-RAT cells shall be less than:

$$T_{reselection\ GSM} = T_{identify\ GSM} + T_{measurement\ GSM} + 40 + T_{BCCH} + T_{RA}\ ms$$

where

T_{BCCH} is the maximum time allowed to read the BCCH data from a GSM cell [21].

T_{RA} is the additional delay caused by the random access procedure.

a) For a UE using measurement occasions and idle intervals to perform GSM measurements

$T_{identify,\ GSM}$ equal to $T_{identify\ about}$ as is specified in 8.4.2.5.2.1.

$$T_{measurement,\ GSM} = Max\left\{8 \cdot \frac{N_{carriers}}{N_{GSM\ carrier\ RSSI}} \cdot T_{meas}, 4 * T_{meas}, 480ms\right\}$$

where

$N_{carriers}$is the number of GSM carriers in the Inter-RAT cell info list

$N_{GSM\ carrier\ RSSI}$ shall be derived from the values in table 8.7 section 8.4.2.5.1.

T_{meas} is specified in section 8.4.2.1.

b) For a UE not using measurement occasions and idle intervals to perform GSM measurements

$T_{identify\ GSM}$ = 150 ms

$T_{measurement\ GSM}$ = 480 ms

5.4.2.2 Interruption time

For UTRA TDD, the interruption time is defined as the time period between the last TTI the UE monitors the FACH on the serving cell and the time instant the UE starts to transmit the RRC CELL UPDATE message to the UTRAN on the RACH.

For UTRA FDD, the interruption time is defined as the time period between the last TTI the UE monitors the FACH on the serving cell and the time instant the UE starts sending preambles on the PRACH for sending the RRC CELL UPDATE message to the UTRAN.

For GSM, the interruption time is defined as the time period between the last TTI the UE monitors the FACH on the serving cell and the time instant the UE starts sending the random access in the target cell of the new RAT.

The requirements on interruption time in this section shall apply only if the signal quality of the serving cell is sufficient to allow decoding of the FACH during cell-re-selection.

5.4.2.2.1 TDD-TDD cell re-selection

In case of cell reselection to an intra-frequency TDD cell or cell re-selection to an inter-frequency TDD cell and when the UE does not need measurement occasions to perform TDD inter-frequency measurements, the interruption time shall be less than,

$$T_{interrupt1} = T_{IU}+20+T_{RA} \text{ ms}$$

In case of cell re-selection to an inter-frequency TDD cell and when the UE needs measurement occasions to perform inter-frequency TDD measurements, the interruption time shall be less than

$$T_{interrupt2} = T_{IU}+20+T_{SI}+T_{RA} \text{ ms}$$

where

T_{IU} is the interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).

T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16].

T_{RA} is the additional delay caused by the random access procedure.

5.4.2.2.2 TDD-FDD cell re-selection

The requirements in this section shall apply to UE supporting TDD and FDD.

In case of cell re-selection to an inter-frequency FDD cell and when the UE does not need measurement occasions to perform inter-frequency FDD measurements, the interruption time shall be less than,

$$T_{interrupt1, FDD} = T_{IU}+20+T_{RA} \text{ ms}$$

In case of cell re-selection to an inter-frequency TDD cell and when the UE needs measurement occasions to perform inter-frequency TDD measurements, the interruption time shall be less than

$$T_{interrupt2, FDD} = T_{IU}+20+T_{SI}+T_{RA} \text{ ms}$$

where

T_{IU} is the interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).

T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16].

T_{RA} is the additional delay caused by the random access procedure.

5.4.2.2.3 TDD-GSM cell re-selection

The requirements in this section shall apply to UE supporting TDD and GSM.

In case of cell re-selection to an inter-RAT cell, the interruption time shall be less than,

$$T_{interrupt,GSM} = 40 +T_{BCCH}+T_{RA} \text{ ms}$$

where

T_{BCCH} is the maximum time allowed to read BCCH data from the GSM cell [21].

T_{RA} is the additional delay caused by the random access procedure.

5.4.2.3 Measurement and evaluation of cell selection criteria S of serving cell

The S-criteria detection delay is defined as the time between the occurrence of an event which leads to that the cell selection criteria S for serving cell is not fulfilled and the moment in time when the UE detects that the cell selection criteria S for serving cell is not fulfilled.

The UE shall filter the P-CCPCH RSCP measurements used for cell selection criteria S evaluation of the serving cell over at least 3 measurement periods $T_{\text{Measurement period intra}}$.

The S-critera detection delay in CELL_FACH state shall be less than:

$$T_{\text{S-criteria}} = 5 \times T_{\text{measurement period intra}} \text{ ms}$$

where

$T_{\text{measurement period intra}}$ is specified in 8.4.2.2.2.

If the UE has evaluated that the serving cell does not fulfil the cell selection criterion S during 4 s and if during this time period the UE has not found any new suitable cell based on measurements of neighbour cells as indicated in the measurement control system information, the UE shall consider having detected "out of service area" and initiate actions according to [16] and [18].

On transition from CELL_DCH to CELL_FACH, if a UE cannot find a suitable UTRA cell, then it is considered to be "out of service area" and shall perform actions according to [16].

5.4.3 Requirements for 1.28Mcps TDD option

The cell re-selection delays specified below are applicable when the RRC parameter $T_{\text{reselection}}$ is set to 0. Otherwise the Cell reselection delay is increased by $T_{\text{reselection}}$ s.

P-CCPCH RSCP shall be used for cell reselection in Cell-FACH state to another TDD cell, CPICH RSCP and if requested in addition CPICH Ec/Io shall be used for cell re-selection to a FDD cell and GSM BCCH carrier RSSI shall be used for cell re-selection to a GSM cell. The accuracies of the measurements used for cell re-selection in an AWGN environment shall comply with the requirements in chapter 9. The measurements used for S-criteria and cell re-selection evaluation in CELL_FACH state shall be performed according to section 8.4A.

NOTE: In CELL_FACH state, there are no requirements for inter-RAT reselection to an E-UTRAN cell.

5.4.3.1 Measurements

The UE measurement capability according to section 8.4A shall apply.

5.4.3.2 Cell re-selection delay

For cell re-selection to TDD, the cell re-selection delay is defined as the time between the occurrence of an event which will trigger Cell Reselection process and the moment in time when the UE starts to send SYNCH-UL sequence for sending the RRC CELL UPDATE message to the UTRAN.

For cell re-selection to FDD the cell re-selection delay is defined as the time between the occurrence of an event which will trigger Cell Reselection process and the moment in time when the UE starts sending the preambles on the PRACH for sending RRC CELL UPDATE message to the UTRAN.

For cell re-selection to GSM the cell re-selection delay is defined as the time between the occurrence of an event which will trigger Cell Reselection process and the moment in time when the UE starts sending the random access in the target cell of the new RAT.

5.4.3.2.1 Intra-frequency cell re-selection

The cell re-selection delay in CELL_FACH state to an intra frequency cell shall be less than:

$$T_{\text{reselection, intra}} = T_{\text{identify intra}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} \text{ ms}$$

If a cell has been detectable at least for $T_{identify,intra}$, the cell re-selection delay in CELL_FACH state to an intra frequency cell shall be less than:

$$T_{reselection,intra} = T_{Measurement\ Period\ Intra} + T_{IU} + 20 + T_{SI} + T_{RA} + T_{CSI}\ ms$$

where

$T_{identify\ intra}$ is specified in 8.4A.2.2.1

$T_{Measurement\ Period\ Intra}$ is specified in 8.4A.2.2.2

T_{IU} is the interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).

T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in [16] for a UTRAN cell.

T_{RA} is the additional delay caused by the random access procedure.

T_{CSI} is the additional delay in case the cell re-selection indication shall be sent in enhanced CELL_FACH state. T_{CSI} can be up to one sub frame (5ms) or the delay caused by the random access procedure (T_{RA}).

This requirement assumes radio conditions to be sufficient, so reading of system information can be done without errors.

5.4.3.2.2 Inter-frequency TDD cell re-selection

The cell re-selection delay in CELL_FACH state to an inter-frequency TDD cell shall be less than:

$$T_{reselection,\ inter} = T_{identify\ inter} + T_{IU} + 20 + T_{SI} + T_{RA} + T_{CSI}\ ms$$

If a cell has been detectable at least for $T_{identify,inter}$, the cell re-selection delay in CELL_FACH state to an inter frequency cell shall be less than:

$$T_{reselection,inter} = T_{measurement\ inter} + T_{IU} + 20 + T_{SI} + T_{RA} + T_{CSI}\ ms$$

where

$T_{identify\ inter}$ is specified in 8.4A.2.3.1

$T_{measurement\ inter}$ is specified in 8.4A.2.3.2

T_{IU} is the interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).

T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell.

T_{RA} is the additional delay caused by the random access procedure.

T_{CSI} is the additional delay in case the cell re-selection indication shall be sent in enhanced CELL_FACH state. T_{CSI} can be up to one sub frame (5ms) or the delay caused by the random access procedure (T_{RA}).

This requirement assumes radio conditions to be sufficient, so reading of system information can be done without errors.

5.4.3.2.3 Inter-frequency FDD cell re-selection

The requirements in this section shall apply to UE supporting both 1.28 Mcps TDD and FDD.

The cell re-selection delay in CELL_FACH state to a FDD cell shall be less than:

$$T_{reselection,\,FDD} = T_{identify\ FDD\ inter} + T_{IU} + 20 + T_{SI} + T_{RA} + T_{CSI}\ \text{ms}$$

If a cell has been detectable at least $T_{identify\ FDD\ inter}$, the cell re-selection delay in CELL_FACH state to FDD cell shall be less than:

$$T_{reselection,\,FDD} = T_{measurement\ FDD\ inter} + T_{IU} + 20 + T_{SI} + T_{RA} + T_{CSI}\ \text{ms}$$

where

$T_{identify\ FDD\ inter}$ is specified in 8.4A.2.4.1

$T_{measurement\ FDD\ inter}$ is specified in 8.4A.2.4.1.

T_{IU} is the interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).

T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in [16] for a UTRAN cell.

T_{RA} is the additional delay caused by the random access procedure.

T_{CSI} is the additional delay in case the cell re-selection indication shall be sent in enhanced CELL_FACH state. T_{CSI} can be up to one sub frame (5ms) or the delay caused by the random access procedure (T_{RA}).

This requirement assumes radio conditions to be sufficient, so reading of system information can be done without errors.

5.4.3.2.4 Inter-RAT cell re-selection

The requirements in this section shall apply to UE supporting both 1.28 Mcps TDD and GSM.

The cell re-selection delay in CELL_FACH state to an inter-RAT cell shall be less than:

$$T_{reselection,\,GSM} = T_{identify\ \ GSM} + T_{measurement\,GSM} + 40 + T_{BCCH} + T_{RA} + T_{CSI}\ \text{ms}$$

T_{RA} = The additional delay caused by the random access procedure.

T_{BCCH} = The maximum time allowed to read BCCH data from GSM cell [21].

T_{CSI} is the additional delay in case the cell re-selection indication shall be sent in enhanced CELL_FACH state. T_{CSI} can be up to one sub frame (5ms) or the delay caused by the random access procedure (T_{RA}).

where

a) For UE requiring idle intervals or measurement occasions:

$T_{identify\ GSM}$ is equal to $T_{identify\ abort}$ as specified in 8.4A.2.5.2.1.

$T_{Measurement\ GSM}$ is the worst case time for measuring one previously identified GSM carrier.

$$T_{measurement\ \ GSM} = Max\left\{8 \cdot \frac{N_{carriers}}{N_{GSM\ carrier\ RSSI}} \cdot T_{meas}, 480ms\right\}$$

where

$N_{carriers}$ is the number of GSM carriers in the Inter-RAT cell info list

$N_{GSM\ carrier\ RSSI}$ is specified in section 8.4A.2.5.1.

T_{meas} is specified in section 8.4A.2.1.

b) For UE not requiring idle intervals and measurement occasions

$T_{identify, GSM}$ = 150 ms

$T_{Measurement, GSM}$ = 480 ms

This requirement assumes radio conditions to be sufficient, so reading of system information can be done without errors.

5.4.3.3 Interruption time

For UTRA TDD, the interruption time is defined as the time period between the last TTI the UE monitors the FACH on the serving cell and the time instant the UE starts to transmit the SYNCH-UL sequence in the UpPTS for sending the RRC CELL UPDATE message to the UTRAN.

For UTRA FDD, the interruption time is defined as the time period between the last TTI the UE monitors the FACH on the serving cell and the time instant the UE starts sending preambles on the PRACH for sending the RRC CELL UPDATE message to the UTRAN.

For GSM, the interruption time is defined as the time period between the last TTI the UE monitors the FACH on the serving cell and the time instant the UE starts sending the random access in the target cell of the new RAT.

The requirements on interruption time in this section shall apply only if the signal quality of the serving cell is sufficient to allow decoding of the FACH during cell-re-selection.

5.4.3.3.1 TDD-TDD cell re-selection

In case of cell re-selection to a TDD cell, the interruption time shall be less than

$$T_{interrupt, TDD} = T_{IU}+20+T_{SI}+T_{RA}+T_{CSI} \text{ ms}$$

where

T_{IU} is the interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).

T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16].

T_{RA} is the additional delay caused by the random access procedure.

T_{CSI} is the additional delay in case the cell re-selection indication shall be sent in enhanced CELL_FACH state. T_{CSI} can be up to one sub frame (5ms) or the delay caused by the random access procedure (T_{RA}).

5.4.3.3.2 TDD-FDD cell re-selection

The requirements in this section shall apply to UE supporting both 1.28 Mcps TDD and FDD.

In case of cell re-selection to a FDD cell, the interruption time shall be less than

$$T_{interrupt, FDD} = T_{IU}+20+T_{SI}+T_{RA}+T_{CSI} \text{ ms}$$

where

T_{IU} is the interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).

T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16].

T_{RA} is the additional delay caused by the random access procedure.

T_{CSI} is the additional delay in case the cell re-selection indication shall be sent in enhanced CELL_FACH state. T_{CSI} can be up to one sub frame (5ms) or the delay caused by the random access procedure (T_{RA}).

5.4.3.3.3 TDD-GSM cell re-selection

The requirements in this section shall apply to UE supporting both 1.28 Mcps TDD and GSM.

In case of cell re-selection to an inter-RAT cell, the interruption time shall be less than

$$T_{interrupt,GSM} = 40 + T_{BCCH} + T_{RA} + T_{CSI} \text{ ms}$$

where

T_{BCCH} is the maximum time allowed to read BCCH data from the GSM cell [21].

T_{RA} is the additional delay caused by the random access procedure.

T_{CSI} is the additional delay in case the cell re-selection indication shall be sent in enhanced CELL_FACH state. T_{CSI} can be up to one sub frame (5ms) or the delay caused by the random access procedure (T_{RA}).

5.4.3.4 Measurement and evaluation of cell selection criteria S of serving cell

The S-criteria detection delay is defined as the time between the occurrence of an event which leads to that the cell selection criteria S for serving cell is not fulfilled and the moment in time when the UE detects that the cell selection criteria S for serving cell is not fulfilled.

The UE shall filter the P-CCPCH RSCP measurements used for cell selection criteria S evaluation of the serving cell over at least 3 measurement periods $T_{Measurement_Period\ Intra}$.

The S-critera detection delay in CELL_FACH state shall be less than:

$$T_{S\text{-}criteria} = 5 \times T_{Measurement_Period\ Intra} \text{ ms}$$

where $T_{Measurement_Period\ Intra}$ is specified in 8.4A.2.2.2.

The UE is "out of service area" if the UE has evaluated for 4 s that that the serving cell does not fulfil the cell selection criterion S and if the UE has not found any new suitable cell based on searches and measurements of the neighbour cells indicated in the measurement control system information during these 4 s. When the UE is "out of service area" it shall initiate cell selection procedures for the selected PLMN as defined in [18].

On transition from CELL_DCH to CELL_FACH, if a UE cannot find a suitable UTRA cell, then it is considered to be "out of service area" and shall perform actions according to [16].

5.4.4 Requirements for 7.68Mcps TDD option

The cell re-selection delays specified below are applicable when the RRC parameter $T_{reselection}$ is set to 0. Otherwise the Cell reselection delay is increased by $T_{reselection}$ s.

P-CCPCH RSCP shall be used for cell reselection in Cell-FACH state to another TDD cell, CPICH Ec/Io and CPICH RSCP shall be used for cell re-selection to a FDD cell and GSM carrier RSSI shall be used for cell re-selection to a GSM cell. The accuracies of the measurements used for cell re-selection in an AWGN environment shall comply with

the requirements in chapter 9. The measurements used for S-criteria and cell re-selection evaluation in CELL_FACH state shall be performed according to section 8.4B.

5.4.4.1 Cell re-selection delay

For UTRA TDD, the cell re-selection delay is defined as the time between the occurrence of an event which will trigger the cell re-selection process and the moment in time when the UE starts sending the RRC CELL UPDATE message to the UTRAN on RACH.

For UTRA FDD, the cell re-selection delay is defined as the time between the occurrence of an event which will trigger the cell re-selection process and the moment in time when the UE starts sending the the preambles on the PRACH for sending RRC CELL UPDATE message to the UTRAN.

For GSM, the cell re-selection delay is defined as the time between the occurrence of an event which will trigger Cell Reselection process and the moment in time when the UE starts sending the random access in the target cell of the new RAT.

These requirements assume radio conditions to be sufficient, so that reading of system information can be done without errors.

5.4.4.1.1 Intra-frequency cell re-selection

The cell re-selection delay in CELL_FACH state for intra frequency TDD cells shall be less than:

$$T_{reselection,\,intra} = T_{identify,\,intra} + T_{IU} + 20 + T_{SI} + T_{RA} \text{ ms}$$

where

$T_{identify,\,intra}$ is specified in 8.4B.2.2.1.

T_{IU} is the interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).

T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16] for a UTRAN cell.

T_{RA} is the additional delay caused by the random access procedure.

If a cell has been detectable at least $T_{identify,intra}$, the cell re-selection delay in CELL_FACH state to an intra-frequency TDD cell shall be less than,

$$T_{reselection,\,intra} = T_{measurement\ period,\,intra} + T_{IU} + 20 + T_{SI} + T_{RA} \text{ ms}$$

where

$T_{measurement\ period\ intra}$ is specified in 8.4B.2.2.2.

5.4.4.1.2 Inter-frequency cell re-selection

The cell re-selection delay in CELL_FACH state for inter-frequency TDD cells shall be less than:

$$T_{reselection,\ inter} = T_{identify,\ inter} + T_{IU} + 20 + T_{SI} + T_{RA} \text{ ms}$$

where

$T_{identify,\,inter}$ is specified in 8.4B.2.3.1.

T_{IU} is the interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).

T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16] for a UTRAN cell.

T_{RA} is the additional delay caused by the random access procedure.

If a cell has been detectable at least $T_{identify,inter}$, the cell re-selection delay in CELL_FACH state to an inter-frequency TDD cell shall be less than,

$$T_{reselection,inter} = T_{measurement\ inter} + T_{IU} + 20 + T_{SI} + T_{RA}\ \text{ms}$$

where

$T_{measurement\ inter}$ is specified in 8.4B.2.3.2.

5.4.4.1.3 TDD FDD cell re-selection

The requirements in this section shall apply to UE supporting TDD and FDD.

The cell re-selection delay in CELL_FACH state to an inter-frequency FDD cells shall be less than:

$$T_{reselection,FDD} = T_{identify\ FDD\ inter} + T_{IU} + 20 + T_{SI} + T_{RA}\ \text{ms}$$

where

$T_{identify,\ FDD}$ is specified in 8.4B.2.4.1

T_{IU} is the interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).

T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16] for a UTRAN cell.

T_{RA} is the additional delay caused by the random access procedure.

If a cell has been detectable at least $T_{identify\ FDD\ inter}$, the cell re-selection delay in CELL_FACH state to an inter-frequency FDD cell shall be less than,

$$T_{reselection,FDD} = T_{measurement\ FDD\ inter} + T_{IU} + 20 + T_{SI} + T_{RA}\ \text{ms}$$

where

$T_{measurement\ FDD\ inter}$ is specified in 8.4B.2.4.1.

5.4.4.1.4 Inter-RAT cell re-selection

The requirements in this section shall apply to UE supporting TDD and GSM.

The cell re-selection delay in CELL_FACH state for inter-RAT cells shall be less than:

$$T_{reselection\ GSM} = T_{identify\ GSM} + T_{measurement\ GSM} + 40 + T_{BCCH} + T_{RA}\ \text{ms}$$

where

T_{BCCH} is the maximum time allowed to read the BCCH data from a GSM cell [21].

T_{RA} is the additional delay caused by the random access procedure.

a) For a UE using measurement occasions and idle intervals to perform GSM measurements

$T_{identify,\ GSM}$ equal to $T_{identify\ about}$ as is specified in 8.4B.2.5.2.1.

$$T_{\text{measurement, GSM}} = Max\left\{8 \cdot \frac{N_{carriers}}{N_{GSM\ carrier\ RSSI}} \cdot T_{meas}, 4 * T_{meas}, 480ms\right\}$$

where

$N_{carriers}$ is the number of GSM carriers in the Inter-RAT cell info list

$N_{GSM\ carrier\ RSSI}$ shall be derived from the values in section 8.4B.2.5.1.

T_{meas} is specified in section 8.4B.2.1.

b) For a UE not using measurement occasions and idle intervals to perform GSM measurements

$T_{identify\ GSM}$ = 150 ms

$T_{measurement\ GSM}$ = 480 ms

5.4.4.2 Interruption time

For UTRA TDD, the interruption time is defined as the time period between the last TTI the UE monitors the FACH on the serving cell and the time instant the UE starts to transmit the RRC CELL UPDATE message to the UTRAN on the RACH.

For UTRA FDD, the interruption time is defined as the time period between the last TTI the UE monitors the FACH on the serving cell and the time instant the UE starts sending preambles on the PRACH for sending the RRC CELL UPDATE message to the UTRAN.

For GSM, the interruption time is defined as the time period between the last TTI the UE monitors the FACH on the serving cell and the time instant the UE starts sending the random access in the target cell of the new RAT.

The requirements on interruption time in this section shall apply only if the signal quality of the serving cell is sufficient to allow decoding of the FACH during cell-re-selection.

5.4.4.2.1 TDD-TDD cell re-selection

In case of cell reselection to an intra-frequency TDD cell or cell re-selection to an inter-frequency TDD cell and when the UE does not need measurement occasions to perform TDD inter-frequency measurements, the interruption time shall be less than,

$$T_{interrupt1} = T_{IU}+20+T_{RA}\ \text{ms}$$

In case of cell re-selection to an inter-frequency TDD cell and when the UE needs measurement occasions to perform inter-frequency TDD measurements, the interruption time shall be less than

$$T_{interrupt2} = T_{IU}+20+T_{SI}+T_{RA}\ \text{ms}$$

where

T_{IU} is the interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).

T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16].

T_{RA} is the additional delay caused by the random access procedure.

5.4.4.2.2 TDD-FDD cell re-selection

The requirements in this section shall apply to UE supporting TDD and FDD.

In case of cell re-selection to an inter-frequency FDD cell and when the UE does not need measurement occasions to perform inter-frequency FDD measurements, the interruption time shall be less than,

$$T_{interrupt1,\ FDD} = T_{IU}+20+T_{RA}\ ms$$

In case of cell re-selection to an inter-frequency TDD cell and when the UE needs measurement occasions to perform inter-frequency TDD measurements, the interruption time shall be less than

$$T_{interrupt2,\ FDD} = T_{IU}+20+T_{SI}+T_{RA}\ ms$$

where

T_{IU} is the interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).

T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16].

T_{RA} is the additional delay caused by the random access procedure.

5.4.4.2.3 TDD-GSM cell re-selection

The requirements in this section shall apply to UE supporting TDD and GSM.

In case of cell re-selection to an inter-RAT cell, the interruption time shall be less than,

$$T_{interrupt,GSM} = 40 +T_{BCCH}+T_{RA}\ ms$$

where

T_{BCCH} is the maximum time allowed to read BCCH data from the GSM cell [21].

T_{RA} is the additional delay caused by the random access procedure.

5.4.4.3 Measurement and evaluation of cell selection criteria S of serving cell

The S-criteria detection delay is defined as the time between the occurrence of an event which leads to that the cell selection criteria S for serving cell is not fulfilled and the moment in time when the UE detects that the cell selection criteria S for serving cell is not fulfilled.

The UE shall filter the P-CCPCH RSCP measurements used for cell selection criteria S evaluation of the serving cell over at least 3 measurement periods $T_{Measurement\ period\ intra}$.

The S-critera detection delay in CELL_FACH state shall be less than:

$$T_{S\text{-}criteria} = 5 \times T_{measurement\ period\ intra}\ \ ms$$

where

$T_{measurement\ period\ intra}$ is specified in 8.4B.2.2.2.

If the UE has evaluated that the serving cell does not fulfil the cell selection criterion S during 4 s and if during this time period the UE has not found any new suitable cell based on measurements of neighbour cells as indicated in the measurement control system information, the UE shall consider having detected "out of service area" and initiate actions according to [16] and [18].

On transition from CELL_DCH to CELL_FACH, if a UE cannot find a suitable UTRA cell, then it is considered to be "out of service area" and shall perform actions according to [16].

5.5 Cell Re-selection in Cell_PCH

5.5.1 Introduction

The UE shall evaluate the cell re-selection criteria specified in [18], based on radio measurements, and if a better cell is found that cell is selected.

5.5.2 Requirements

5.5.2.1 3.84 Mcps option

Requirements for cell re-selection in Cell_PCH state are the same as for cell re-selection in idle mode, see section 4.2. The UE shall support all DRX cycle lengths in table 4.1, according to [16].

The UE shall consider having detected "out of service area" and initiate actions according to [16] and [18], if the serving cell does not fulfil the cell selection criterion S in N_{serv} consecutive DRX cycles and if during the following 12 s no new suitable cell based upon measurements of all neighbour cells indicated in the measurement control system information has been found.

5.5.2.2 1.28 Mcps option

Requirements for cell re-selection in Cell_PCH state are the same as for cell re-selection in idle mode, see section 4.2. The UE shall support all DRX cycle lengths in table 4.1A, according to [16].

5.5.2.3 7.68 Mcps option

Requirements for cell re-selection in Cell_PCH state are the same as for cell re-selection in idle mode, see section 4.2. The UE shall support all DRX cycle lengths in table 4.1B, according to [16].

The UE shall consider having detected "out of service area" and initiate actions according to [16] and [18], if the serving cell does not fulfil the cell selection criterion S in N_{serv} consecutive DRX cycles and if during the following 12 s no new suitable cell based upon measurements of all neighbour cells indicated in the measurement control system information has been found.

5.6 Cell Re-selection in URA_PCH

5.6.1 Introduction

The UE shall evaluate the cell re-selection criteria specified in [18], based on radio measurements, and if a better cell is found that cell is selected.

5.6.2 Requirements

5.6.2.1 3.84 Mcps option

Requirements for cell re-selection in URA_PCH state are the same as for cell re-selection in idle mode, see section 4.2. The UE shall support all DRX cycle lengths in table 4.1, according to [16].

The UE shall consider having detected "out of service area" and initiate actions according to [16] and [18], if the serving cell does not fulfil the cell selection criterion S in N_{serv} consecutive DRX cycles and if during the following 12 s no new suitable cell based upon measurements of all neighbour cells indicated in the measurement control system information has been found.

5.6.2.2 1.28 Mcps option

Requirements for cell re-selection in URA_PCH state are the same as for cell re-selection in idle mode, see section 4.2. The UE shall support all DRX cycle lengths in table 4.1A, according to [16].

5.6.2.3 7.68 Mcps option

Requirements for cell re-selection in URA_PCH state are the same as for cell re-selection in idle mode, see section 4.2. The UE shall support all DRX cycle lengths in table 4.1B, according to [16].

The UE shall consider having detected "out of service area" and initiate actions according to [16] and [18], if the serving cell does not fulfil the cell selection criterion S in N_{serv} consecutive DRX cycles and if during the following 12 s no new suitable cell based upon measurements of all neighbour cells indicated in the measurement control system information has been found.

5.7 RACH reporting

5.7.1 Introduction

5.7.1.1 3.84 Mcps TDD option

The network may request the UE to report on RACH P-CCPCH RSCP for the serving cell and up to 6 strongest monitored set cells and SFN-SFN observed time difference between the serving cell and up to 6 different monitored set cells.

5.7.1.2 1.28 Mcps TDD option

The network may request the UE to report on RACH P-CCPCH RSCP for the serving cell and up to 6 strongest monitored set cells and SFN-SFN observed time difference between the serving cell and up to 6 different monitored set cells.

5.7.1.3 7.68 Mcps TDD option

The network may request the UE to report on RACH P-CCPCH RSCP for the serving cell and up to 6 strongest monitored set cells and SFN-SFN observed time difference between the serving cell and up to 6 different monitored set cells.

5.7.2 Requirements

5.7.2.1 3.84 Mcps TDD option

If all of the following conditions are true, the UE is allowed to have an additional delay of N_{RACH}*50 ms in RACH transmission compared to the normal RACH transmission delay.

- SFN-SFN observed time difference measurement results are required to be reported on RACH
- The set of cells on which the SFN-SFN observed time difference measurement is to be reported has not changed since the previous RACH measurement report
- The UE has not measured the SFN-SFN observed time differences for the cells to be reported on RACH in the CELL_FACH state according to the requirements defined in Section 8.4.2.2

If at least one of the previous conditions is false, the UE shall be able to report the requested measurement results on RACH within a normal RACH transmission delay.

N_{RACH} is the number of cells requiring SFN decoding prior to the reporting of SFN-SFN observed time difference measurement results on RACH.

5.7.2.2 1.28 Mcps TDD option

If all of the following conditions are true, the UE is allowed to have an additional delay of N_{RACH}*50 ms in RACH transmission compared to the normal RACH transmission delay.

- SFN-SFN observed time difference measurement results are required to be reported on RACH

- The set of cells on which the SFN-SFN observed time difference measurement is to be reported has not changed since the previous RACH measurement report
- The UE has not measured the SFN-SFN observed time differences for the cells to be reported on RACH in the CELL_FACH state according to the requirements defined in Section 8.4A.2.2

If at least one of the previous conditions is false, the UE shall be able to report the requested measurement results on RACH within a normal RACH transmission delay.

N_{RACH} is the number of cells requiring SFN decoding prior to the reporting of SFN-SFN observed time difference measurement results on RACH.

5.7.2.3 7.68 Mcps TDD option

If all of the following conditions are true, the UE is allowed to have an additional delay of N_{RACH}*50 ms in RACH transmission compared to the normal RACH transmission delay.

- SFN-SFN observed time difference measurement results are required to be reported on RACH
- The set of cells on which the SFN-SFN observed time difference measurement is to be reported has not changed since the previous RACH measurement report
- The UE has not measured the SFN-SFN observed time differences for the cells to be reported on RACH in the CELL_FACH state according to the requirements defined in Section 8.4B.2.2

If at least one of the previous conditions is false, the UE shall be able to report the requested measurement results on RACH within a normal RACH transmission delay.

N_{RACH} is the number of cells requiring SFN decoding prior to the reporting of SFN-SFN observed time difference measurement results on RACH.

5.8 Inter-RAT cell change order from UTRAN in CELL_DCH and CELL_FACH

5.8.1 Introduction

5.8.1.1 3.84 Mcps TDD option

The purpose of inter-RAT cell change order from UTRAN TDD to GSM is to transfer a connection between the UE and UTRAN TDD to GSM. This procedure may be used in CELL_DCH and CELL_FACH state. The cell change order procedure is initiated from UTRAN with a RRC message (CELL CHANGE ORDER FROM UTRAN). The procedure is described in [16].

5.8.1.2 1.28 Mcps TDD option

The purpose of inter-RAT cell change order from 1.28 Mcps TDD to GSM is to transfer a connection between the UE and 1.28 Mcps TDD to GSM. This procedure may be used in CELL_DCH and CELL_FACH state. The cell change order procedure is initiated from UTRAN with a RRC message (CELL CHANGE ORDER FROM UTRAN). The procedure is described in [16].

NOTE: No procedure is defined for Inter-RAT cell change order from 1.28Mcps TDD to E-UTRAN.

5.8.1.3 7.68 Mcps TDD option

The purpose of inter-RAT cell change order from UTRAN TDD to GSM is to transfer a connection between the UE and UTRAN TDD to GSM. This procedure may be used in CELL_DCH and CELL_FACH state. The cell change order procedure is initiated from UTRAN with a RRC message (CELL CHANGE ORDER FROM UTRAN). The procedure is described in [16].

5.8.2 Requirements

5.8.2.1 Delay

5.8.2.1.1 3.84 Mcps TDD option

The requirements in this section shall apply to UE supporting 3.84 Mcps TDD and GSM.

When the UE receives a RRC CELL CHANGE ORDER FROM UTRAN COMMAND with the activation time "now" or earlier than the value in table 5.5 from the end of the last TTI containing the RRC command, the UE shall start transmit the random access in the target cell of the new RAT within the value in table 5.5 from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than the value in table 5.5 from the end of the last TTI containing the RRC command, the UE shall start transmit the random access in the target cell of the new RAT at the designated activation time.

The UE shall process the RRC procedures for the RRC CELL CHANGE ORDER FROM UTRAN COMMAND within 50 ms. If the activation time is used, it corresponds to the CFN of the UTRAN channel.

Table 5.5: Inter-RAT cell change order from UTRAN - delay

UE synchronisation status	delay [ms]
The UE has synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received	90 + T_{BCCH} +T_{RA}
The UE has not synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received	190 + T_{BCCH}**+T_{RA}**

where

T_{BCCH} = the maximum time allowed to read BCCH data from the GSM cell [21].

T_{RA} = the additional delay caused by the random access procedure

5.8.2.1.2 1.28 Mcps TDD option

The requirements in this section shall apply to UE supporting both 1.28 Mcps TDD and GSM.

The RRC procedure performance value for the RRC CELL CHANGE ORDER FROM UTRAN COMMAND shall be within 50 ms.

If the activation time is used in the RRC CELL CHANGE ORDER FROM UTRAN COMMAND, it corresponds to the CFN of the UTRAN channel.

When the UE receives a RRC CELL CHANGE ORDER FROM UTRAN COMMAND with the activation time "now" or earlier than the value in table 5.5A from the end of the last TTI containing the RRC command, the UE shall start transmit the random access in the target cell of the new RAT within the value in table 5.5A from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than the value in table 5.5A from the end of the last TTI containing the RRC command, the UE shall start transmit the random access in the target cell of the new RAT at the designated activation time.

Table 5.5A: Inter-RAT cell change order from UTRAN - delay

UE synchronisation status	delay [ms]
The UE has synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received	90 + T_{BCCH} +T_{RA}
The UE has not synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received	190 + T_{BCCH}**+T_{RA}**

where

T_{BCCH} = the maximum time allowed to read BCCH data from the GSM cell [21].

T_{RA} = the additional delay caused by the random access procedure

5.8.2.1.3 7.68 Mcps TDD option

The requirements in this section shall apply to UE supporting 7.68 Mcps TDD and GSM.

When the UE receives a RRC CELL CHANGE ORDER FROM UTRAN COMMAND with the activation time "now" or earlier than the value in table 5.5B from the end of the last TTI containing the RRC command, the UE shall start transmit the random access in the target cell of the new RAT within the value in table 5.5B from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than the value in table 5.5B from the end of the last TTI containing the RRC command, the UE shall start transmit the random access in the target cell of the new RAT at the designated activation time.

The UE shall process the RRC procedures for the RRC CELL CHANGE ORDER FROM UTRAN COMMAND within 50 ms. If the activation time is used, it corresponds to the CFN of the UTRAN channel.

Table 5.5B: Inter-RAT cell change order from UTRAN - delay

UE synchronisation status	delay [ms]
The UE has synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received	90 + T_{BCCH} +T_{RA}
The UE has not synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received	190 + T_{BCCH}**+T_{RA}**

where

T_{BCCH} = the maximum time allowed to read BCCH data from the GSM cell [21].

T_{RA} = the additional delay caused by the random access procedure

5.8.2.2 Interruption time

5.8.2.2.1 3.84 Mcps TDD option

The requirements in this section shall apply to UE supporting 3.84 Mcps TDD and GSM.

The requirements on interruption time below is valid when the signal quality of the serving cell is good enough to allow decoding of the old channel during the inter-RAT cell change order from UTRAN delay.

The interruption time, i.e. the time between the end of the last TTI containing a transport block that the UE is able to receive on the old channel and the time the UE starts transmit the random access in the target cell, shall be less than the value in table 5.6. The requirement in table 5.6 for the case, that UE is not synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received, is valid when the signal quality of the GSM cell is good enough for successful synchronisation with one attempt.

Table 5.6: Inter-RAT cell change order from UTRAN - interruption time

Synchronisation status	Interruption time [ms]
The UE has synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received	40 + T_{BCCH} +T_{RA}
The UE has not synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received	140 + T_{BCCH}+T_{RA}

where

T_{BCCH} = the maximum time allowed to read BCCH data from the GSM cell [21].

T_{RA} = the additional delay caused by the random access procedure

5.8.2.2.2 1.28 Mcps TDD option

The requirements in this section shall apply to UE supporting both 1.28 Mcps TDD and GSM.

The requirement on interruption time below is valid when the signal quality of the serving cell is good enough to allow decoding of the old channel during the inter-RAT cell change order from UTRAN delay.

The interruption time, i.e. the time between the end of the last TTI containing a transport block that the UE is able to receive on the old channel and the time the UE starts transmit the random access in the target cell, shall be less than the value in table 5.6A.

Table 5.6A: Inter-RAT cell change order from UTRAN - interruption time

Synchronisation status	Interruption time [ms]
The UE has synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received	40 + T_{BCCH} +T_{RA}
The UE has not synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received	140 + T_{BCCH}+T_{RA}

where

T_{BCCH} = the maximum time allowed to read BCCH data from the GSM cell [21].

T_{RA} = the additional delay caused by the random access procedure

The requirements in Table 5.6A for the case where the UE has not synchronised to the GSM target cell before receiving the RRC CELL CHANGE ORDER FROM UTRAN COMMAND shall apply only if the signal quality of the GSM target cell is sufficient for successful synchronisation with one attempt.

If the UE is unable to synchronise to the GSM cell on the first attempt, it shall continue to search for synchronisation information for up to 800 ms. If after 800 ms the UE has not synchronised to the GSM cell it shall follow the cell change order from UTRAN failure procedure specified in [16].

5.8.2.2.3 7.68 Mcps TDD option

The requirements in this section shall apply to UE supporting 7.68 Mcps TDD and GSM.

The requirements on interruption time below is valid when the signal quality of the serving cell is good enough to allow decoding of the old channel during the inter-RAT cell change order from UTRAN delay.

The interruption time, i.e. the time between the end of the last TTI containing a transport block that the UE is able to receive on the old channel and the time the UE starts transmit the random access in the target cell, shall be less than the value in table 5.6B. The requirement in table 5.6B for the case, that UE is not synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received, is valid when the signal quality of the GSM cell is good enough for successful synchronisation with one attempt.

Table 5.6B: Inter-RAT cell change order from UTRAN - interruption time

Synchronisation status	Interruption time [ms]
The UE has synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received	40 + T_{BCCH} +T_{RA}
The UE has not synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received	140 + T_{BCCH}+T_{RA}

where

T_{BCCH} = the maximum time allowed to read BCCH data from the GSM cell [21].

T_{RA} = the additional delay caused by the random access procedure

6 (void)

6A RRC Connection Control

6A.1 RRC re-establishment

6A.1.1 Introduction

RRC connection re-establishment is needed, when a UE in CELL_DCH state loses radio connection due to radio link failure. The procedure when a radio link failure occurs in CELL_DCH state is specified in [16].

6A.1.2 Requirements

6A.1.2.1 3.84Mcps TDD option

The requirements in this section are applicable when the UE performs a RRC connetion re-establishment to a cell belonging to any of the frequencies present in the previous monitored set.

The UE moves from CELL_DCH to CELL_FACH state and shall be capable of sending a RRC CELL UPDATE message using the cause value "radio link failure" within $T_{RE\text{-}ESTABLISH}$ seconds from when the radio link failure occurred.

$T_{RE\text{-}ESTABLISH}$ equals the RRC procedure performance value $T_{RRC\text{-}RE\text{-}ESTABLISH}$ according to [16] plus the UE re-establishment delay $T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ}$ specified in 6A.1.2.1.

$$T_{RE\text{-}ESTABLISH} = T_{RRC\text{-}RE\text{-}ESTABLISH} + T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ}$$

6A.1.2.1.1 UE re-establishment delay requirement

For UTRA TDD, the UE re-establishment delay $T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ}$ is defined as the time between the moment when radio link failure is considered by the UE to when the UE starts sending the RRC CELL UPDATE message to the UTRAN on RACH.

$T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ}$ is depending on whether the target cell is known by the UE or not. A cell shall be considered known by the UE if either or both of the following conditions are true:

- the UE has had a radio link connected to the cell during the last 5 seconds
- the cell has been measured by the UE during the last 5 seconds.

In case that the target cell is known by the UE, the UE re-establishment delay shall be less than

$$T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ\text{-}KNOWN} = 50 + T_{SEARCH\text{-}KNOWN} + T_{SI} \text{ ms}$$

In case that the target cell is not known by the UE, the UE re-establishment delay shall be less than,

$$T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ\text{-}UNKNOWN} = 50 + T_{SEARCH\text{-}UNKNOWN} * NF + T_{SI} \text{ ms}$$

in case that the target cell is not known by the UE;

where,

$T_{SEARCH\text{-}KNOWN}$ Equal to 100 ms, the time it takes for the UE to search for the known target cell

$T_{SEARCH\text{-}UNKNOWN}$ Equal to 800 ms, the time it takes for the UE to search for the unknown target cell

T_{SI} The time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16] for a UTRAN cell.

NF The number of different frequencies in the previous (old) monitored set.

These requirements assume radio conditions to be sufficient, so that reading of system information can be done without errors.

6A.1.2.2 1.28Mcps TDD option

The requirements in this section are applicable when the UE performs a RRC connection re-establishment to a cell belonging to any of the frequencies present in the previous monitored set.

The UE moves from CELL_DCH to CELL_FACH state and shall be capable of sending a CELL UPDATE message using the cause "radio link failure" within $T_{RE-ESTABLISH}$ seconds from when the radio link failure occurred.

$T_{RE-ESTABLISH}$ equals the RRC procedure delay ($T_{RRC-RE-ESTABLISH}$) according to TS25.331 plus the UE Re-establishment delay requirement ($T_{UE-RE-ESTABLISH-REQ}$), specified in 6A.1.2.2.1.

$$T_{RE-ESTABLISH} = T_{RRC-RE-ESTABLISH} + T_{UE-RE-ESTABLISH-REQ}$$

6A.1.2.2.1 Re-establishment delay requirement

The UE Re-establishment delay requirement ($T_{UE-RE-ESTABLISH-REQ}$) is defined as the time between the moment when radio link failure is considered by the UE to when the UE starts to send SYNC-UL in the UpPTS for sending a CELL UPDATE message using the cause "radio link failure".

$T_{RE-ESTABLISH-REQ}$ is depending on whether the target cell is known by the UE or not. A cell is known if either or both of the following conditions are true:

- the UE has had a dedicated connection to the cell during the last 5 seconds
- the cell has been measured by the UE during the last 5 seconds

The UE Re-establishment delay shall be less than

$$T_{UE-RE-ESTABLISH-REQ-KNOWN} = 50ms + T_{search} + T_{SI} + T_{RA}$$

in case that the target cell is known by the UE, and

$$T_{UE-RE-ESTABLISH-REQ-UNKNOWN} = 50ms + T_{search} * NF + T_{SI} + T_{RA}$$

in case that the target cell is unknown by the UE

where

- T_{search} is the time it takes for the UE to search the cell.
 - T_{search} =100 ms if the target cell is known by the UE, and
 - T_{search} =800 ms if the target cell is not known by the UE.
- T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms)
- T_{RA} = The additional delay caused by the random access procedure.
- *NF* is the number of different frequencies in the monitored set.

This requirement assumes radio conditions to be sufficient, so that reading of system information can be done without errors.

6A.1.2.3 7.68Mcps TDD option

The requirements in this section are applicable when the UE performs a RRC connetion re-establishment to a cell belonging to any of the frequencies present in the previous monitored set.

The UE moves from CELL_DCH to CELL_FACH state and shall be capable of sending a RRC CELL UPDATE message using the cause value "radio link failure" within $T_{RE-ESTABLISH}$ seconds from when the radio link failure occurred.

$T_{RE-ESTABLISH}$ equals the RRC procedure performance value $T_{RRC-RE-ESTABLISH}$ according to [16] plus the UE re-establishment delay $T_{UE-RE-ESTABLISH-REQ}$ specified in 6A.1.2.3.

$$T_{RE-ESTABLISH} = T_{RRC-RE-ESTABLISH} + T_{UE-RE-ESTABLISH-REQ}$$

6A.1.2.3.1 UE re-establishment delay requirement

For UTRA TDD, the UE re-establishment delay $T_{UE-RE-ESTABLISH-REQ}$ is defined as the time between the moment when radio link failure is considered by the UE to when the UE starts sending the RRC CELL UPDATE message to the UTRAN on RACH.

$T_{UE-RE-ESTABLISH-REQ}$ is depending on whether the target cell is known by the UE or not. A cell shall be considered known by the UE if either or both of the following conditions are true:

- the UE has had a radio link connected to the cell during the last 5 seconds
- the cell has been measured by the UE during the last 5 seconds.

In case that the target cell is known by the UE, the UE re-establishment delay shall be less than

$$T_{UE-RE-ESTABLISH-REQ-KNOWN} = 50+T_{SEARCH-KNOWN}+ T_{SI} \text{ ms}$$

In case that the target cell is not known by the UE, the UE re-establishment delay shall be less than,

$$T_{UE-RE-ESTABLISH-REQ-UNKNOWN} = 50+T_{SEARCH-UNKNOWN}*NF + T_{SI} \text{ ms}$$

in case that the target cell is not known by the UE;

where,

$T_{SEARCH -KNOWN}$ Equal to 100 ms, the time it takes for the UE to search for the known target cell

$T_{SEARCH -UNKNOWN}$ Equal to 800 ms, the time it takes for the UE to search for the unknown target cell

T_{SI} The time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16] for a UTRAN cell.

NF The number of different frequencies in the previous (old) monitored set.

These requirements assume radio conditions to be sufficient, so that reading of system information can be done without errors.

6A.2 Transport format combination selection in UE

6A.2.1 Introduction

When the UE estimates that a certain TFC would require more power than the maximum transmit power, it shall limit the usage of transport format combinations for the assigned transport format combination set. This in order to make it possible for the network operator to maximise the coverage. The transport format combination selection in UE is described in [13].

6A.2.2 Requirements

6A.2.2.1 3.84 Mcps TDD option

The UE shall continuously evaluate based on the *Elimination*, *Recovery* and *Blocking* criteria defined below, how TFCs can be used for the purpose of TFC selection. The evaluation shall be performed using the estimated UE transmit power of a given CCTrCH in its associated timeslots.

In the case of a single CCTrCH or multiple CCTrCHs having mutually exclusive timeslot assignments, the UE shall consider the *Eliminiation* criterion for a given TFC of a CCTrCH to be fulfilled if for 3 successive frames the estimated UE transmit power is greater than the Maximum UE transmitter power for at least one timeslot associated with the CCTrCH in each frame.

. In the case of multiple CCTrCHs not having mutually exclusive timeslot assignments, if for a given CCTrCH for 3 successive frames the estimated UE transmit power is greater than the Maximum UE transmitter power for at least one timeslot associated with the CCTrCH in each frame, the UE shall consider the *Elimination* criterion for a given TFC to be fulfilled if the use of this TFC will cause the estimated UE transmit power to continue to be greater than the Maximum UE transmitter power in at least one timeslot associated with the CCTrCH.

In the case of multi-frame operation of UL Physical Channels, the UE shall only consider active frames for the evaluation of the *Elimination* criterion.

If the *Elimination* criterion for a given TFC is fulfilled, the MAC in the UE shall consider that the TFC is in Excess-Power state for the purpose of TFC selection.

MAC in the UE shall indicate the available bitrate for each logical channel to upper layers within T_{notify} from the moment the *Elimination* criterion was fulfilled.

The UE shall not consider the *Recovery* criterion for a given TFC to be fulfilled until the use of this TFC will not cause the estimated UE transmit power to be greater than the Maximum UE transmitter power for all UL timeslots associated with the TFC for a minimum of 3 successive frames.

In the case of multi-frame operation of UL Physical Channels, the UE shall only consider active frames for the evaluation of the *Recovery* criterion.

. If the *Recovery* criterion for a given TFC is fulfilled, the MAC in the UE shall consider that the TFC is in Supported state for the purpose of TFC selection.

MAC in the UE shall indicate the available bitrate for each logical channel to upper layers within T_{notify} from the moment the *Recovery* criterion was fulfilled.

The UE shall consider the *Blocking* criterion for a given TFC to be fulfilled at the latest at the start of the longest uplink TTI after the moment at which the TFC will have been in Excess-Power state for a duration of

$$(T_{notify} + T_{modify} + T_{L1_proc}).$$

where:

T_{notify} equals 15 ms, and

T_{modify} equals $MAX(T_{adapt_max}, T_{TTI})$, and

$T_{L1\ proc}$ equals 35 ms, and

T_{adapt_max} equals $MAX(T_{adapt_1}, T_{adapt_2}, ..., T_{adapt_N})$, and

N equals the number of logical channels that need to change rate, and

T_{adapt_n} equals the time it takes for higher layers to provide data to MAC in a new supported bitrate, for logical channel n. Table 6A.1 defines T_{adapt} times for different services. For services where no codec is used T_{adapt} shall be considered to be equal to 0 ms.

Table 6A.1: T_{adapt}

Service	T_{adapt} [ms]
UMTS AMR	40
UMTS AMR 2	60

T_{TTI} equals the longest uplink TTI of the selected TFC (ms).

The Maximum UE transmitter power is defined as follows

Maximum UE transmitter power = MIN(Maximum allowed UL TX Power, UE maximum transmit power)

where

Maximum allowed UL TX Power is set by UTRAN and defined in [16], and

UE maximum transmit power is defined by the UE power class, and specified in [5].

6A.2.2.2 1.28 Mcps TDD option

The UE shall continuously evaluate based on the *Elimination*, *Recovery* and *Blocking* criteria defined below, how TFCs can be used for the purpose of TFC selection. The evaluation shall be performed using the estimated UE transmit power of a given TFC. The UE transmit power estimation shall be made using the UE transmitted power measured over the measurement period and the gain factors of the corresponding TFC.

The UE shall consider the *Eliminiation* criterion for a given TFC to be fulfilled if the estimated UE transmit power needed for this TFC is greater than the Maximum UE transmitter power for at least X out of Y successive measurement periods. The MAC in the UE shall consider that the TFC is in Excess-Power state for the purpose of TFC selection.

MAC in the UE shall indicate the available bitrate for each logical channel to upper layers within [15 ms] from the moment the *Elimination* criterion was fulfilled.

The UE shall consider the *Recovery* criterion for a given TFC to be fulfilled if the estimated UE transmit power needed for this TFC has not been greater than the Maximum UE transmitter power for at least Y successive measurement periods. The MAC in the UE shall consider that the TFC is in Supported state for the purpose of TFC selection.

MAC in the UE shall indicate the available bitrate for each logical channel to upper layers within T_{notify} from the moment the *Recovery* criterion was fulfilled.

The UE shall consider the *Blocking* criterion for a given TFC to be fulfilled at the latest at the start of the longest uplink TTI after the moment at which the TFC will have been in Excess-Power state for a duration of (T_{notify} + T_{modify}+ T_{L1_proc}).

where:

T_{notify} equals [15] ms, and

T_{modify} equals MAX(T_{adapt_max},T_{TTI}), and

$T_{L1\ proc}$ equals 15 ms, and

T_{adapt_max} equals MAX(T_{adapt_1}, T_{adapt_2}, ..., T_{adapt_N}), and

N equals the number of logical channels that need to change rate, and

T_{adapt_n} equals the time it takes for higher layers to provide data to MAC in a new supported bitrate, for logical channel n. Table 6A.2 defines T_{adapt} times for different services. For services where no codec is used T_{adapt} shall be considered to be equal to 0 ms.

Table 6A.2: T_{adapt}

Service	T_{adapt} [ms]
AMR	40

T_{TTI} equals the longest uplink TTI of the selected TFC (ms).

The Maximum UE transmitter power is defined as follows

Maximum UE transmitter power = MIN(Maximum allowed UL TX Power, UE maximum transmit power)

where

Maximum allowed UL TX Power is set by UTRAN and defined in [16], and

UE maximum transmit power is defined by the UE power class, and specified in [5].

6A.2.2.3 7.68 Mcps TDD option

The UE shall continuously evaluate based on the *Elimination*, *Recovery* and *Blocking* criteria defined below, how TFCs can be used for the purpose of TFC selection. The evaluation shall be performed using the estimated UE transmit power of a given CCTrCH in its associated timeslots.

In the case of a single CCTrCH or multiple CCTrCHs having mutually exclusive timeslot assignments, the UE shall consider the *Eliminiation* criterion for a given TFC of a CCTrCH to be fulfilled if for 3 successive frames the estimated UE transmit power is greater than the Maximum UE transmitter power for at least one timeslot associated with the CCTrCH in each frame.

In the case of multiple CCTrCHs not having mutually exclusive timeslot assignments, if for a given CCTrCH for 3 successive frames the estimated UE transmit power is greater than the Maximum UE transmitter power for at least one timeslot associated with the CCTrCH in each frame, the UE shall consider the *Elimination* criterion for a given TFC to be fulfilled if the use of this TFC will cause the estimated UE transmit power to continue to be greater than the Maximum UE transmitter power in at least one timeslot associated with the CCTrCH.

In the case of multi-frame operation of UL Physical Channels, the UE shall only consider active frames for the evaluation of the *Elimination* criterion.

If the *Elimination* criterion for a given TFC is fulfilled, the MAC in the UE shall consider that the TFC is in Excess-Power state for the purpose of TFC selection.

MAC in the UE shall indicate the available bitrate for each logical channel to upper layers within T_{notify} from the moment the *Elimination* criterion was fulfilled.

The UE shall not consider the *Recovery* criterion for a given TFC to be fulfilled until the use of this TFC will not cause the estimated UE transmit power to be greater than the Maximum UE transmitter power for all UL timeslots associated with the TFC for a minimum of 3 successive frames.

In the case of multi-frame operation of UL Physical Channels, the UE shall only consider active frames for the evaluation of the *Recovery* criterion.

If the *Recovery* criterion for a given TFC is fulfilled, the MAC in the UE shall consider that the TFC is in Supported state for the purpose of TFC selection.

MAC in the UE shall indicate the available bitrate for each logical channel to upper layers within T_{notify} from the moment the *Recovery* criterion was fulfilled.

The UE shall consider the *Blocking* criterion for a given TFC to be fulfilled at the latest at the start of the longest uplink TTI after the moment at which the TFC will have been in Excess-Power state for a duration of

$$(T_{notify} + T_{modify} + T_{L1_proc}).$$

where:

T_{notify} equals 15 ms, and

T_{modify} equals $MAX(T_{adapt_max}, T_{TTI})$, and

$T_{L1\ proc}$ equals 35 ms, and

T_{adapt_max} equals $MAX(T_{adapt_1}, T_{adapt_2}, ..., T_{adapt_N})$, and

N equals the number of logical channels that need to change rate, and

T_{adapt_n} equals the time it takes for higher layers to provide data to MAC in a new supported bitrate, for logical channel n. Table 6A.3 defines T_{adapt} times for different services. For services where no codec is used T_{adapt} shall be considered to be equal to 0 ms.

Table 6A.3: T_{adapt}

Service	T_{adapt} [ms]
UMTS AMR	40
UMTS AMR 2	60

T_{TTI} equals the longest uplink TTI of the selected TFC (ms).

The Maximum UE transmitter power is defined as follows

Maximum UE transmitter power = MIN(Maximum allowed UL TX Power, UE maximum transmit power)

where

Maximum allowed UL TX Power is set by UTRAN and defined in [16], and

UE maximum transmit power is defined by the UE power class, and specified in [5].

6A.3 Maximum allowed UL TX Power

6A.3.1 Introduction

UTRAN may limit the power the UE is using on the uplink by setting the maximum allowed UL TX power IE defined in [16].

6A.3.2 Requirements

6A.3.2.1 3.84 Mcps option

For each measurement period, the UE shall with the use of the UE transmitted power measurement, estimate if it has reached the Maximum allowed UL TX Power or not. With tolerances as defined for the UE transmitted power measurement accuracy (section 9.1.2.1.1), the UE output power shall not exceed the Maximum allowed UL TX Power, as set by the UTRAN.

For UE output powers that are outside the range covered by the UE transmitted power measurement the UE output power shall not exceed the Maximum allowed UL TX Power with more than the tolerances specified for the UL Power Control in [5].

6A.3.2.2 1.28 Mcps option

For each measurement period, the UE shall with the use of the UE transmitted power measurement, estimate if it has reached the Maximum allowed UL TX Power or not. With tolerances as defined for the UE transmitted power measurement accuracy (section 9.1.2.1.1), the UE output power shall not exceed the Maximum allowed UL TX Power, as set by the UTRAN.

For UE output powers that are outside the range covered by the UE transmitted power measurement the UE output power shall not exceed the Maximum allowed UL TX Power with more than the tolerances specified for the UL Power Control in [5].

6A.3.2.3 7.68 Mcps option

For each measurement period, the UE shall with the use of the UE transmitted power measurement, estimate if it has reached the Maximum allowed UL TX Power or not. With tolerances as defined for the UE transmitted power measurement accuracy (section 9.1.2.1.1), the UE output power shall not exceed the Maximum allowed UL TX Power, as set by the UTRAN.

For UE output powers that are outside the range covered by the UE transmitted power measurement the UE output power shall not exceed the Maximum allowed UL TX Power with more than the tolerances specified for the UL Power Control in [5].

7 Timing characteristics

7.1 Timing Advance

7.1.1 3.84 Mcps TDD option

7.1.1.1 Introduction

The timing advance is initiated from UTRAN with an RRC message that implies an adjustement of the timing advance, see TS 25.331 section 8.6.6.26.

To update timing advance of a UE, the UTRAN measures RX Timing deviation. The measurements are defined in TS 25.225 and measurement accuracies are specified in section 9.

7.1.1.2 Requirements

7.1.1.2.1 Timing Advance adjustment accuracy

The UE shall adjust the timing of its transmissions with an accuracy better than or equal to ±0.5 chip to the signalled timing advance value.

7.1.1.2.2 Timing Advance adjustment delay

The UE shall adjust the timing of its transmission at the designated activation time, when the indicated activation time is later than D_{TA} msec from the end of the last TTI containing the RRC message implying an adjustment of the timing advance.

D_{TA} equals the RRC procedure delay of the RRC message implying an adjustment of the timing advance as defined in TS25.331 section 13.5.

7.1.2 1.28 Mcps TDD option

For 1.28 Mcps TDD the timing advance in the UE is adjusted by means of uplink synchronization. For the random access procedure the node B commands the UE to adjust its synchronisation shift by means of signalling the received position of the UpPTS in the FPACH. During the connection the node B measures the timing in the uplink and transmits a SS (Synchronization Shift) command to the UE at least once per sub-frame.

These SS commands determined whether the UE synchronization shift is either left unchanged, or adjusted 1 step up or 1 step down. The step size of the SS adjustment is (k/8)Tc where k (=1,2, …,8) is signalled by higher layer signalling.

7.1.2.1 Uplink synchronization control requirements for UE for 1.28 Mcps TDD option

Uplink synchronization control is the ability of the UE transmitter to adjust its TX timing in accordance with one or more SS commands received in the downlink.

7.1.2.1.1 Uplink synchronization control steps

The SS step is the change in UE transmission timing in response to a single SS command, SS_cmd, received by the UE.

7.1.2.1.1.1 Minimum requirement

The UE transmitter shall have the capability of changing the transmission timing with a step size of 1/8, 2/8, 3/8, …, 1 chip according to the value of Δ_{SS}, within n=(1,2,…,6) time slots excluding special timeslots (DwPTS, GP, UpPTS) after the SS_cmd arrived (closed loop). For the open loop any step being a multiple of 1/8 chip has to be allowed.

a) The minimum transmission timing step $\Delta_{SS,min}$ due to closed loop uplink synchronization control shall be within the range shown in Table 7.1.

b) In case uplink synchronization control implies larger adjustment than the minimum step the UE shall perform a multiple integer number of the minimum step. Within the implementation grid of the applicable timing steps of the UE the step being closest to the required step should be executed.

Table 7.1: Uplink synchronisation control range

SS_cmd	Uplink synchronisation control range for minimum step	
	1/8 chip step size	
	Lower	Upper
Up	1/9 chip	1/7 chip
Down	1/9 chip	1/7 chip

7.1.3 7.68 Mcps TDD option

7.1.3.1 Introduction

The timing advance is initiated from UTRAN with an RRC message that implies an adjustement of the timing advance, see TS 25.331 section 8.6.6.26.

To update timing advance of a UE, the UTRAN measures RX Timing deviation. The measurements are defined in TS 25.225 and measurement accuracies are specified in section 9.

7.1.3.2 Requirements

7.1.3.2.1 Timing Advance adjustment accuracy

The UE shall adjust the timing of its transmissions with an accuracy better than or equal to ±0.5 chip to the signalled timing advance value.

7.1.3.2.2 Timing Advance adjustment delay

The UE shall adjust the timing of its transmission at the designated activation time, when the indicated activation time is later than D_{TA} msec from the end of the last TTI containing the RRC message implying an adjustment of the timing advance.

D_{TA} equals the RRC procedure delay of the RRC message implying an adjustment of the timing advance as defined in TS25.331 section 13.5.

7.2 Cell synchronization accuracy

7.2.1 Definition

Cell synchronization accuracy is defined as the maximum deviation in frame start times between any pair of cells on the same frequency that have overlapping coverage areas.

7.2.2 Minimum requirements

The cell synchronization accuracy shall be better than or equal to 3μs.

7.3 UE Transmit Timing for 3.84 Mcps TDD Option

7.3.1 Definition

UE transmit timing is defined as the frame start time of uplink transmissions relative to the downlink frame timing at zero propagation delay with timing advance turned off. The reference point for UE transmit timing shall be the antenna connector. This is applicable for the AWGN propagation condition. In the case of multi-path fading conditions, the reference point for UE transmit timing shall be the first significant path of the received PCCPCH.

7.3.2 Minimum Requirement

The UE transmit timing error shall be within 0 to +3 chips for the AWGN propagation condition.

7.3A UE Transmit Timing for 7.68 Mcps TDD Option

7.3A.1 Definition

UE transmit timing is defined as the frame start time of uplink transmissions relative to the downlink frame timing at zero propagation delay with timing advance turned off. The reference point for UE transmit timing shall be the antenna connector. This is applicable for the AWGN propagation condition. In the case of multi-path fading conditions, the reference point for UE transmit timing shall be the first significant path of the received PCCPCH.

7.3A.2 Minimum Requirement

The UE transmit timing error shall be within 0 to +3 chips for the AWGN propagation condition.

7.4 UE timer accuracy

7.4.1 Introduction

UE timers are used in different protocol entities to control the UE behaviour.

7.4.2 Requirements

For UE timers T3xx, T_{barred}, Treselection, Penalty_time, T_{CRmax}, $T_{CrmaxHyst}$ [16], UE shall comply with the timer accuracies according to Table 7.2.

The requirements are only related to the actual timing measurements internally in the UE. They do not include the following:

- Inaccuracy in the start and stop conditions of a timer (e.g. UE reaction time to detect that start and stop conditions of a timer is fulfilled), or
- Inaccuracies due to restrictions in observability of start and stop conditions of a UE timer (e.g. TTI alignment when UE sends messages at timer expiry).

Table 7.2

Timer value [s]	Accuracy
timer value <4	± 0.1 s
timer value ≥ 4	± 2.5 %

8 UE Measurements Procedures

8.1 General Measurement Requirements in CELL_DCH State (3.84 Mcps option)

8.1.1 Introduction

This section contains requirements on the UE regarding measurement reporting in CELL_DCH state. The requirements are split in TDD intra frequency, TDD inter frequency, FDD and GSM measurements. These measurements may be used by the UTRAN, e.g. for handover decisions. The measurements are defined in [14], the measurement model is defined in [15] and measurement accuracies are specified in section 9. Control of measurement reporting is specified in [16] and parallel measurements are specified in section 8.2. For the description of the idle intervals see [14].

8.1.2 Requirements

8.1.2.1 UE Measurement Capability

The UE shall be able to monitor up to

- 32 intra frequency TDD cells (including serving cell), and
- 32 inter frequency cells, including
 - TDD mode cells distributed on up to 2 additional TDD carriers and
 - Depending on UE capability, FDD mode cells, distributed on up to 3 FDD carriers.
- Depending on UE capability, 32 inter RAT GSM cells,
- Depending on UE capability, [32] E-UTRA cells distributed on up to [TBD] E-UTRA carriers

The requirements in section 9 are applicable for a UE performing measurements according to this section.

For measurements on intra- and inter-frequency TDD, inter-frequency FDD and GSM cells, idle intervals as described in [14] can be used. The time $T_{measure}$ per 480 ms period available for these measurements is the sum of the duration of all idle intervals during any given 480 ms period, i.e. the amount of time not used by the UE for receiving in active DL timeslots or for transmission in active UL timeslots. Note that Beacon timeslots of the serving cell can be located inside idle intervals and that implementation margin due to frequency switching is not taken into account for $T_{measure}$.

The requirements in this section are based upon the assumption, that the time durations T_{intra} and T_{inter} during any given 480 ms period for the purpose of measurements on intra-frequency TDD cells and for measurements on inter-frequency TDD, inter-frequency FDD and GSM cells are respectively,

$$T_{intra} = \left[96 + 24 \cdot \text{Floor}\left\{ \frac{M_{intra} + 3}{4} \right\} \right] \text{ ms}$$

$$T_{inter} = 480 \text{ ms} - T_{intra}$$

where, M_{intra} is equal to the number of intra-frequency TDD cells in the neighbour list

The time duration T_{inter} shall be equally shared for inter-frequency measurements on the different modes and systems which the UE has capability for and that are in the monitored set signalled by UTRAN, i.e.

$$T_{inter} = N_{TDD} \cdot T_{TDD\ inter} + N_{FDD} \cdot T_{FDD\ inter} + N_{GSM} \cdot T_{GSM\ inter}$$

For this, the following parameters are defined,

$T_{TDD\ inter}$ is the time duration allocated for the purpose of TDD inter-frequency measurements.

$T_{FDD\ inter}$ is the time duration allocated for the purpose of FDD inter-frequency measurements.

$T_{GSM\ inter}$ is the time duration allocated for the purpose of GSM measurements.

N_{TDD} is equal to 1 if there are inter-frequency TDD cells in the neighbour list, equal to 0 otherwise.

N_{FDD} is equal to 1 if the UE has capability for FDD and if there are inter-frequency FDD cells in the neighbour list, equal to 0 otherwise.

N_{GSM} is equal to 1 if the UE has capability for GSM and if there are GSM cells in the neighbour list, equal to 0 otherwise.

8.1.2.2 TDD intra frequency measurements

During the CELL_DCH state, the UE shall continuously measure identified intra frequency TDD cells and search for new intra frequency TDD cells in the monitored set. In case the UTRAN requests the UE to report detected set cells, the UE shall also search for intra frequency TDD cells outside the monitored and active set. Cells, which are neither included in the active set nor in the monitored set, and are identified by the UE belong to the detected set according to [16].

In order for the requirements in the following subsections to apply, the Beacon timeslots of the intra-frequency TDD cells indicated in the measurement control information shall either be synchronised with the Beacon timeslots of the serving cell or non-overlapping in time with the active UL timeslots used by the UE for transmission, such that the UE can measure an intra-frequency TDD cell at least once every frame for the slot allocation case in use in this cell. The UE shall be capable of intra frequency measurements during active DL timeslots.

8.1.2.2.1 Identification of a new cell

The UE shall be able to identify a new detectable intra-frequency TDD cell belonging to the monitored set within $T_{identify\ intra}$ ms, where $T_{identify\ intra}$ = 800 ms.

When L3 filtering is used, an additional delay can be expected.

8.1.2.2.2 UE P-CCPCH RSCP measurement capability

In CELL_DCH state, the UE shall be capable of performing P-CCPCH RSCP measurements for $X_{measurement\ intra}$ identified intra-frequency TDD cells of the monitored set with a measurement period for intra-frequency P-CCPCH RSCP measurements $T_{measurement\ period\ intra,}$ where

$X_{measurement\ intra}$ = 6 (cells)

$T_{measurement\ period\ intra}$ = 200 ms

The UE physical layer shall be capable of reporting these measurements to higher layers with the measurement period $T_{measurement\ period\ intra}$.

If the UE has identified more than $X_{measurement\ intra}$ intra-frequency TDD cells, the UE shall perform measurements of all identified cells but the reporting rate of P-CCPCH RSCP measurements of cells from the UE physical layer to higher layers may be decreased.. The measurement accuracy for all measured cells shall be as specified in the section 9.

8.1.2.2.2A Timeslot ISCP measurement capability

In CELL_DCH state the measurement period for intra frequency Timeslot ISCP measurements on arbitrary DL timeslots, including Beacon timeslots is 400 ms. When no inter frequency measurement is scheduled, the UE shall be capable of performing Timeslot ISCP measurements for a total of 10 different combinations of an arbitrary DL timeslot and an intra-frequency cell [16], including the current serving cell. The UE physical layer shall be capable of reporting Timeslot ISCP measurements to higher layers with the measurement period of 400 ms.

When inter-frequency measurements are required by the network, the UE shall be capable of performing Timeslot ISCP measurements for at least $Y_{measurement\ intra\ ISCP}$ different combinations, where $Y_{measurement\ intra\ ISCP}$ is defined in the following equation. Any Timeslot ISCP measurement that could not be performed during that measurement period, shall be measured in the following measurement periods. The measurement accuracy of the Timeslot ISCP measurement shall be as specified in the section 9.

$$Y_{measurement\ intra\ ISCP} = Floor\left\{ X_{basic\ measurement\ ISCP} \cdot \frac{5}{6} \frac{T_{intra}}{T_{measurement\ period\ intra\ ISCP}} \right\}$$

whereby function Floor(x) takes the integer part of x.

- $X_{basic\ measurement\ ISCP}$ = 10 (combinations of an arbitrary DL timeslot and an intra-frequency cell)
- $T_{measurement_period,\ intra,\ ISCP}$ = 400 ms. The measurement period for intra frequency Timeslot ISCP measurements.
- T_{intra} is specified in 8.1.2.1.

8.1.2.2.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.2.4 Event-triggered Periodic Reporting

Reported measurements in event triggered periodic measurement reports shall meet the requirements in section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in section 8.1.2.2.5 Event Triggered Reporting.

8.1.2.2.5 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report, until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay

uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH . The delay uncertainty is twice the TTI of the uplink DCCH.

For P-CCPCH RSCP measurements, the event triggered measurement reporting delay, on cells belonging to the monitored set, measured without L3 filtering shall be less than $T_{identify\ intra}$ defined in Section 8.1.2.2.1. When L3 filtering is used an additional delay can be expected..

If a cell, belonging to the monitored set has been detectable at least for the time period $T_{identify\ intra}$ and then enters the reporting range, the event triggered P-CCPCH RSCP measurement reporting delay shall be less than $T_{measurement_period\ intra}$ when the L3 filter has not been used and the UE P-CCPCH RSCP measurement capabilities of section 8.1.2.2.1 are valid.

8.1.2.3 TDD inter frequency measurements

When signalled by UTRAN during CELL_DCH state, the UE shall continuously measure detected inter-frequency TDD cells and search for new inter-frequency TDD cells indicated in the measurement control information.

In order for the requirements in the following subsections to apply, the Beacon timeslots of the inter-frequency TDD cells indicated in the measurement control information shall be non-overlapping in time with the active DL and UL timeslots used by the UE for reception and transmission such that the UE can measure an inter-frequency cell TDD cell at least once every frame for the slot allocation case in use in this cell and by assuming 2*0.5 ms implementation margin for frequency switching per idle interval.

8.1.2.3.1 Identification of a new cell

When idle intervals are used for inter-frequency TDD measurements, the UE shall be able to identify a new detectable inter-frequency TDD cell belonging to the monitored set within

$$T_{identify\ inter} = Max\left\{ 5000, N_{basic\ identify\ TDD\ inter} \cdot \frac{T_{measurement\ period\ TDD\ inter}}{N_{TDD\ inter}} \cdot N_{Freq} \right\} ms$$

If the UE does not require idle intervals to perform inter-frequency TDD measurements, the UE shall be able to identify a new detectable inter-frequency TDD cell belonging to the monitored set within 5000 ms.

When L3 filtering is used, an additional delay can be expected.

8.1.2.3.2 P-CCPCH RSCP measurement period

When idle intervals are used for TDD inter frequency measurements, the UE shall be capable of performing P-CCPCH RSCP measurements for $X_{measurement\ TDD\ inter}$ inter-frequency TDD cells per TDD frequency of the monitored set.

The UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in section 9 and with a measurement period of $T_{measurement\ inter}$.

$$T_{measurement\ inter} = Max\left\{ T_{measurement\ period\ TDD\ inter}, N_{basic\ measurement\ TDD\ inter} \cdot \frac{T_{measurement\ period\ TDD\ inter}}{N_{TDD\ inter}} \cdot N_{Freq} \right\} ms$$

If the UE does not require idle intervals to perform TDD inter-frequency measurements, the measurement period for inter frequency P-CCPCH RSCP measurements shall be 480 ms.

Where,

$X_{measurement\ TDD\ inter}$ = 6 (cells)

$T_{measurement_period\ inter}$ = 480 ms. The time period used for calculating the measurement period $T_{measurement_inter}$ for inter frequency P-CCPCH RSCP measurements.

$N_{TDD\ inter}$: This is the available number of measurement opportunities for a Beacon timeslot of an inter-frequency TDD cell during the time period $T_{TDD\ inter}$. The UE shall consider that a measurement opportunity on a Beacon timeslot of an inter-frequency TDD cell is provided if an idle interval of length equal to or greater than 3

timeslots less 2*0.5 ms implementation margin for frequency switching per idle interval completely overlaps in time with the Beacon timeslot of the inter-frequency TDD cell.

$N_{basic_identify_TDD\ inter}$ = 80. This is a number of measurement opportunities for a Beacon timeslot of an inter-frequency TDD cell during the time period used in the inter frequency TDD equation where the maximum allowed time for the UE to identify a new detectable inter-frequency TDD cell is defined.

$N_{basic_measurement_TDD\ inter}$ = 5. This is a number of measurement opportunities for a Beacon timeslot of an inter-frequency TDD cell during the time period $T_{TDD\ inter}$ used in the inter-frequency TDD equation where the measurement period for inter-frequency P-CCPCH RSCP measurements is defined.

$N_{Freq\ TDD}$: This is the number of TDD frequencies indicated in the inter frequency measurement control information.

Note that the number of measurement opportunities available to the UE depends on UL and DL timeslot assignments for transmission and reception and on Beacon timeslot allocations in the inter-frequency TDD cells.

8.1.2.3.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.3.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send event triggered measurement reports, as long as the reporting criteria is not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report, until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH . The delay uncertainty is twice the TTI of the uplink DCCH.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify\ inter}$ defined in Section 8.1.2.3.1 When L3 filtering is used an additional delay can be expected.

If an intra frequency TDD cell has been detectable at least for the time period $T_{identify_\ inter}$ and then enters the reporting range, the event triggered measurement reporting delay shall be less than $T_{measurement_period\ inter}$ when the L3 filter has not been used.

8.1.2.4 FDD measurements

The requirements in this section shall apply to UE supporting TDD and FDD.

In the CELL_DCH state when FDD inter frequency measurements are scheduled the UE shall continuously measure detected inter frequency FDD cells and search for new inter frequency FDD cells indicated in the measurement control information.

8.1.2.4.1 Identification of a new cell

When idle intervals are used for inter-frequency FDD measurements, the UE shall be able to identify a new detectable inter-frequency FDD cell belonging to the monitored set within

$$T_{identify\ \ FDD\ inter} = Max\left\{5000, T_{basic\ identify\ \ FDD\ inter} \cdot \frac{T_{measurement\ \ period\ FDD\ inter}}{T_{FDD\ inter}} \cdot N_{Freq}\right\} ms$$

If the UE does not require idle intervals to perform FDD inter-frequency measurements, the UE shall be able to identify a new detectable inter-frequency FDD cell belonging to the monitored set within 5000 ms.

When L3 filtering is used an additional delay can be expected.

An inter-frequency FDD cell shall be considered detectable, when CPICH Ec/Io $\geq$ -20 dB, SCH_Ec/Io $\geq$ -17 dB and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code.

8.1.2.4.2 UE CPICH measurement capability

When idle intervals are used for FDD inter frequency measurements, the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9 with measurement period given by

$$T_{\text{measurement FDD inter}} = Max\left\{ T_{\text{measurement period FDD inter}}, T_{\text{basic measurement FDD inter}} \cdot \frac{T_{\text{measurement period FDD inter}}}{T_{\text{FDD inter available}}} \cdot N_{Freq,FDD} \right\} ms$$

If the UE does not require idle intervals to perform FDD inter-frequency measurements, the measurement period for inter frequency CPICH measurements shall be 480 ms.

The UE shall be capable of performing CPICH measurements for $X_{\text{measurement FDD inter}}$ inter-frequency FDD cells per frequency of the monitored set and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{\text{measurement FDD inter}}$.

$X_{\text{basic measurement FDD inter}}$ = 6 (cells)

$T_{\text{measurement_period FDD inter}}$ = 480 ms. The time period used for calculating the measurement period $T_{\text{measurement_FDD inter}}$ for inter frequency CPICH measurements.

$T_{\text{FDD inter: available}}$: This is the available time for measurements on inter-frequency FDD cells. $T_{\text{FDD inter available}}$ shall be derived from $T_{\text{FDD inter}}$ by assuming 2*0.5 ms implementation margin for frequency switching per idle interval and by only taking into account the remaining number of full timeslots per idle interval. Idle intervals smaller than 3 timeslots shall not be taken into account for calculating $T_{\text{FDD inter available}}$.

$T_{\text{basic_identify_FDD inter}}$ = 800 ms. This is the time period used in the inter frequency equation where the maximum allowed time for the UE to identify a new detectable inter-frequency FDD cell is defined.

$T_{\text{basic_measurement_FDD inter}}$ = 50 ms. This is the time period used in the inter-frequency equation for defining the measurement period for inter frequency CPICH measurements.

N_{Freq}: This is the number of FDD frequencies indicated in the inter frequency measurement control information.

8.1.2.4.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.4.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send event triggered measurement reports as long as the reporting criteria are not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertanty is twice the TTI of the uplink DCCH.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{\text{identify FDD inter}}$ defined in Section 8.1.2.4.1. When L3 filtering is used an additional delay can be expected.

If an inter frequency FDD cell has been detectable at least for the time period $T_{\text{identify_FDD inter}}$ and then enters the reporting range, the event triggered measurement reporting delay shall be less than $T_{\text{measurement_period FDD inter}}$ provided the timing to that cell has not changed more than +/-32 chips during the time period $T_{\text{identify FDD inter}}$ and the L3 filter has not been used.

8.1.2.5 GSM measurements

The requirements in this section shall apply to UE supporting TDD and GSM.

In CELL_DCH state, measurements opportunities for GSM measurements are provided by means of idle intervals.

Measurements on GSM cells can be requested with BSIC verified or BSIC non-verified.

a) In CELL_DCH state, when signaled by UTRAN and when idle intervals are used for GSM measurements, the UE shall continuously measure GSM cells and search for new GSM cells given in the monitored set.

 - In section 8.1.2.1 the split of measurements between different modes and systems is defined. Every second measurement opportunity scheduled for GSM measurements, as given by 8.1.2.1 shall be allocated for GSM initial BSIC identification.

 - The remaining measurements opportunities scheduled for GSM measurements shall be used as follows. 3 measurement opportunities out of 4 shall be allocated for GSM carrier RSSI measurements and 1 out of 4 shall be allocated for GSM BSIC reconfirmation. The scheduling of measurement opportunities between GSM carrier RSSI measurements and GSM BSIC reconfirmation is up to the UE.

b) In CELL_DCH state, when signaled by UTRAN and when the UE does not need idle intervals to perform GSM measurements, the UE shall measure all GSM cells present in the monitored set

 - the relevant requirements for GSM dedicated mode when a TCH channel is assigned in [21] shall apply. This is further detailed in the following sub-sections.

8.1.2.5.1 GSM carrier RSSI

a) For a UE using idle intervals to perform GSM measurements

A UE supporting GSM measurements using idle intervals shall meet the minimum number of GSM carrier RSSI measurements specified in table 8.1.

In the CELL_DCH state the measurement period, $T_{measurement\ period\ GSM}$, for the GSM carrier RSSI measurement is 480 ms.

The UE shall meet the measurement accuracy requirements stated for RXLEV in [21], when the given measurement time allows the UE to the take at least 3 GSM carrier RSSI samples per GSM carrier in the monitored set during the measurement period.

Table 8.1

Idle interval length (timeslots)	Number of GSM carrier RSSI samples in each idle interval
3	1
4	2
5	3
6	4
7	6
8	7
9	8
10	10
11	11
12	12
13	14

In case the UE is not able to acquire the required number of samples per GSM carrier during one measurement period, the UE shall measure as many GSM carriers as possible during that measurement period using at least 3 samples per GSM carrier. The GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods. This means that, in this particular case, the L1 reporting period to higher layers of a GSM neighbour can be a multiple of the measurement period.

b) For a UE not using idle intervals to perform GSM measurements

The samples allocated to each carrier shall as far as possible be uniformly distributed over each measurement period. At least 3 received signal level measurement samples are required per GSM carrier RSSI measurement. The measurement period shall be 480 ms.

8.1.2.5.2 BSIC verification

a) For a UE using idle intervals to perform GSM measurements

The procedure for BSIC verification on a GSM cell can be divided into the following two tasks:

1) Initial BSIC identification: Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the relative timing between the TDD and GSM cell.. The requirements for Initial BSIC identification can be found in section 8.1.2.5.2.1.

2) BSIC re-confirmation: Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed.. The requirements for Initial BSIC identification can be found in section 8.1.2.5.2.2.

Measurements on a GSM cell can be requested with BSIC verified or BSIC non-verified. If GSM measurements are requested with BSIC verified, the UE shall be able to report the GSM cells with BSIC verified for those cells where the verification of BSIC has been successful.

If the UTRAN requests measurements on a GSM cell with BSIC verified, the UE shall behave as follows:

- The UE shall perform GSM carrier RSSI measurements according to Section 8.1.2.5.1 and the UE shall perform measurement reporting as defined in Section 8.6.7.6 of [16].

- The UE shall use the last available GSM carrier RSSI measurement results for arranging GSM cells in signal strength order for performing BSIC identification.

- The UE shall perform BSIC re-confirmation according to Section 8.1.2.5.2.2

The UE shall perform event evaluation for event-triggered reporting after the BSIC has been verified for a GSM cell. The UE shall use the last available GSM carrier RSSI measurement results in event evaluation and event-triggered reporting. Periodic reports shall be triggered according to the given reporting period even if the BSIC of a GSM cell has not been verified as defined in Sections 8.6.7.5 and 8.6.7.6 of [16]. Non verified BSIC shall be indicated in the measurement report.

The UE shall consider the BSIC of a GSM cell to be "verified", if it has decoded the SCH of the BCCH carrier and identified the BSIC at least one time (initial BSIC identification). From that time instant, the UE shall attempt to re-confirm the BSIC at least once every $T_{\text{re-confirm abort}}$ seconds. Otherwise, the UE shall consider the BSIC of the GSM cell to be "non-verified".

The time requirement for initial BSIC identification, $T_{\text{identify abort}}$, and the BSIC re-confirmation interval $T_{\text{re-confirm abort}}$ can be found in the sections below.

The UE shall be able to decode a BSIC for the purpose of initial BSIC identification or BSIC reconfirmation within an idle interval, when the time difference between the middle of the received GSM synchronisation burst at the UE and the middle of the idle interval is within the limits specified in Table 8.1.AA.

Table 8.1AA

Idle Interval Length (timeslots)	Maximum time difference [μs]
3	± 65
4	± 398
5	± 732
6	± 1065
7	± 1398
8	± 1732
9	± 2065
10	± 2398
11	± 2732
12	± 3065
13	± 3398

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in [20].

b) For a UE not using idle intervals to perform GSM measurements

If a BSIC is decoded and matches the expected value, the UE shall consider it as "verified", otherwise it shall consider it as "non-verified".

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in [20].

8.1.2.5.2.1 Initial BSIC identification

For GSM cells that are requested with BSIC verified the UE shall attempt to decode the SCH on the BCCH carrier of the 8 strongest BCCH carriers of the GSM cells indicated in the measurement control information. The UE shall give priority for BSIC decodingattempts in decreasing signal strength order to BSIC carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value after layer 3 filtering. The GSM signal strength levels used in BSIC identification for arranging GSM cells in signal strength order shall be based on the latest GSM carrier RSSI measurement results available.

If the BSIC of a GSM BCCH carriers has been successfully decoded the UE shall inmediately continue BSIC identification with the next BCCH carrier, in signal strength order, with unknown BSIC. The GSM cell for which the BSIC has been successfully identified shall be moved to the BSIC re-confirmation procedure.

If the UE has not successfully decoded the BSIC of the GSM BCCH carrier within $T_{identify\ abort}$, the UE shall abort the BSIC decoding attempts for that GSMBCCH carrier. The UE shall continue to try to perform BSIC decoding of the next GSM BCCH carrier in signal strength order. The GSM BCCH carrier for which the BSIC decoding failed shall not be re-considered for BSIC decoding until BSIC decoding attempts have been made for all the rest of the 8 strongest GSM BCCH carriers in the monitored set with unknown BSIC.

Where $T_{identify\ abort}$ = 5000 ms.

8.1.2.5.2.2 BSIC re-confirmation

The requirements of this section are applicable for BSIC re-confirmation.

The UE shall maintain the timing information of at least 8 identified GSM cells. Initial timing information is obtained from the initial BSIC decoding. The timing information shall be updated every time the BSIC is decoded.

If more than one BSIC can be decoded within the same measurement window given by the idle intervals, priority shall be given to the least recently decoded BSIC.

If the UE fails to decode the BSIC after two successive attempts or if the UE has not been able to re-confirm the BSIC for a GSM BCCH carrier within $T_{re\text{-}confirm_abort}$ seconds, the UE shall abort the BSIC re-confirmation attempts for that GSM BCCH carrier. The GSM BCCH carrier shall be treated as a new GSM BCCH carrier with unidentified BSIC and the GSM BCCH carrier shall be moved to the initial BSIC decoding procedure, see section 8.1.2.5.2.1. The UE shall be able to make BSIC re-confirmation attempts for the 8 strongest GSM cells in the monitored list.

Where $T_{re\text{-}confirm\ abort}$ =5000 ms.

8.1.2.5.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.5.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as the reporting criteria is not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH.

The event triggered reporting delay requirement is valid, when the UE for each GSM carrier in the monitored set can take the required number of samples during the measurement period $T_{measurement\ period\ GSM}$ (see section 8.1.2.5.1).

The event triggered measurement reporting delay for a GSM cell with verified BSIC, measured without L3 filtering shall be less than $2*T_{measurement\ period\ GSM}$, where $T_{measurement\ period\ GSM}$ is defined in Section 8.1.2.5.1. When L3 filtering is used an additional delay can be expected. For a GSM cell with non-verified BSIC an additional delay according to section 8.1.2.5.2.1 Initial BSIC identification can be expected.

8.1.2.6 TDD Synchronisation to new cells

For the requirements in section 8 and 9 to apply, an intra-frequency or inter-frequency TDD cell shall be considered detectable when,

$$\left.\left(\frac{P-CCPCH_E_c}{I_o}\right)\right|_{in\ dB} \geq -8dB$$

$$\left.\left(\frac{SCH_E_c}{I_o}\right)\right|_{in\ dB} \geq -13dB$$

where the received P-CCPCH E_c/I_o is defined as

$$\left.\left(\frac{P-CCPCH_E_c}{I_o}\right)\right|_{in\ dB} = \left.\left(\frac{P-CCPCH_E_c}{I_{or}}\right)\right|_{in\ dB} - \left.\frac{I_o}{\left(\hat{I}_{or}\right)}\right|_{in\ dB}$$

and the received SCH E_c/I_o is defined as

$$\left.\left(\frac{SCH_E_c}{I_o}\right)\right|_{in\ dB} = \left.\left(\frac{SCH_E_c}{I_{or}}\right)\right|_{in\ dB} - \left.\frac{I_o}{\left(\hat{I}_{or}\right)}\right|_{in\ dB}$$

and SCH_Ec/Ior is equally divided between primary synchronisation code and the sum of all secondary synchronisation codes, where the secondary synchronisation codes are also equally divided.

8.1.2.7 E-UTRAN FDD measurements

The requirements in this section apply only to UEs supporting 3.84Mcps TDD and E-UTRAN FDD.

1) For a UE requiring idle intervals to perform E-UTRAN FDD measurements. In CELL_DCH state when signalled by UTRAN and when idle intervals are used, the UE shall continuously measure previously detected E-UTRAN FDD cells and search for new E-UTRAN FDD cells.

2) For a UE not requiring idle intervals to perform E-UTRAN FDD measurements:

- the UE shall measure either all E-UTRAN FDD cells present in the monitored set or, if only frequencies are provided in the neighbour cell list, the strongest cells present in the detected set, up to the monitoring capabilities of the UE.

- the relevant requirements for E-UTRAN FDD dedicated mode when a [TBD] channel is assigned in 3GPP TS 36.133 [24] shall apply. This is further detailed in the following subclauses.

8.1.2.7.1 Identification of a new cell

When idle intervals are used for E-UTRAN FDD measurements, the UE shall be able to identify a new detectable E-UTRAN FDD cell within

$$T_{\text{Identify E-UTRAN FDD}} = T_{\text{Basic_Identify_E-UTRAN FDD}} \cdot \frac{T_{\text{Measurement_Period_E-UTRAN FDD}}}{T_{\text{E-UTRAN FDD}}} \quad ms ;$$

If the UE does not need idle intervals to perform E-UTRAN FDD measurements, the UE shall be able to identify a new detectable E-UTRAN FDD cell within $T_{\text{Basic_Identify_E-UTRAN FDD}}$ ms.

Where:

$T_{\text{E-UTRAN FDD}}$: This is the minimum time that is available for E-UTRAN FDD measurements during the measurement period $T_{\text{Measurement_Period_E-UTRAN FDD}}$ with an arbitrarily chosen timing. The minimum time per idle interval is calculated by assuming 2*0.5 ms for implementation margin.

$T_{\text{Basic_Identify_E-UTRAN FDD}}$ = 480 ms

When L3 filtering is used an additional delay can be expected.

An E-UTRAN FDD cell shall be considered detectable when

- RSRP related side condition given in Section 9.1 of [24] are fulfilled for a corresponding Band,

- $SCH_RP|_{dBm} \geq$ -127 dBm for Bands 1, 4, 6, 10, defined in [26] and SCH_Ês/Iot ≥ -4 dB,

- $SCH_RP|_{dBm} \geq$ -126 dBm for Band 9 defined in [26] and SCH_Ês/Iot ≥ -4 dB,

- $SCH_RP|_{dBm} \geq$ -125 dBm for Bands 2, 5, 7 , 11, 17 defined in [26] and SCH_Ês/Iot ≥ -4 dB,

- $SCH_RP|_{dBm} \geq$ -124 dBm for Bands 3, 8, 12, 13, 14 defined in [26] and SCH_Ês/Iot ≥ -4 dB.

8.1.2.7.2 E-UTRAN RSRP and RSRQ measurement period

When idle intervals are scheduled for E-UTRAN FDD measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.1.5a and 9.1.1.5b with measurement period of $T_{\text{Measurement_Period_E-UTRAN FDD}} = 480 \times N_{\text{Freq}}$ ms where N_{Freq} is the number of FDD frequencies indicated in the E-UTRAN measurement control information.

The UE shall be capable of performing RSRP measurements of at least 4 E-UTRAN FDD cells per E-UTRAN FDD frequency for up to 3 FDD E-UTRAN frequencies.

8.1.2.7.3 Periodic reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.7.4 Void

8.1.2.7.5 Event Triggered reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH . The delay uncertainty is: [2] x TTI_{DCCH}. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{Identify\ E\text{-}UTRAN\ FDD}$ defined in Section 8.1.2.7.1. When L3 filtering is used an additional delay can be expected.

If a cell has been detectable at least for the time period $T_{Identify\ E\text{-}UTRAN\ FDD}$ and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_E\text{-}UTRAN\ FDD}$ provided the timing to that cell has not changed more than [FFS] while idel interval has not been available and the L3 filter has not been used.

8.1.2.8 E-UTRAN TDD measurements

The requirements in this section apply only to UEs supporting 1.28Mcps TDD and E-UTRAN TDD.

1) For a UE requiring idle intervals to perform E-UTRAN TDD measurements. In CELL_DCH state when signalled by UTRAN and when idle intervals are used, the UE shall continuously measure previously detected E-UTRAN TDD cells and search for new E-UTRAN TDD cells.

2) For a UE not requiring idle intervals to perform E-UTRAN TDD measurements:

 - the UE shall measure either all E-UTRAN TDD cells present in the monitored set or, if only frequencies are provided in the neighbour cell list, the strongest cells present in the detected set, up to the monitoring capabilities of the UE.

 - the relevant requirements for E-UTRAN TDD dedicated mode when a [TBD] channel is assigned in 3GPP TS 36.133 [24] shall apply. This is further detailed in the following subclauses.

8.1.2.8.1 Identification of a new cell

When idle intervals are used for E-UTRAN measurements, the UE shall be able to identify a new detectable E-UTRAN TDD cell within

$$T_{Identify\ E\text{-}UTRAN\ TDD} = T_{Basic_Identify_E\text{-}UTRAN\ TDD} \cdot \frac{T_{Measurement_Period_E\text{-}UTRAN\ TDD}}{T_{E\text{-}UTRAN\ TDD}} \quad ms;$$

If the UE does not need idle intervals to perform E-UTRAN TDD measurements, the UE shall be able to identify a new detectable E-UTRAN TDD cell within $T_{Basic_Identify_E\text{-}UTRAN\ TDD}$ ms.

Where:

$T_{E\text{-}UTRAN\ TDD}$: This is the minimum time that is available for E-UTRAN TDD measurements during the measurement period $T_{Measurement_Period_E\text{-}UTRAN\ TDD}$ with an arbitrarily chosen timing. The minimum time per idle interval is calculated by assuming 2*0.5 ms for implementation margin.

$T_{Basic_Identify_E\text{-}UTRAN\ TDD}$ = 480 ms

When L3 filtering is used an additional delay can be expected.

An E-UTRAN TDD cell shall be considered detectable when

- RSRP related side condition given in Section 9.1 of [24] are fulfilled for a corresponding Band,
- SCH_RP|$_{dBm}$≥ -127 dBm for Bands 33, 34, 35, 36, 37, 38, 39 and 40 defined in [26] and SCH Ês/Iot ≥ -4 dB,

8.1.2.8.2 E-UTRAN RSRP and RSRQ measurement period

When idle intervals are scheduled for E-UTRAN TDD measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.1.5a and 9.1.1.5b with measurement period of $T_{Measurement_Period_E\text{-}UTRAN\ TDD} = 480 \times N_{Freq}$ ms where N_{Freq} is the number of TDD frequencies indicated in the E-UTRAN measurement control information.

The UE shall be capable of performing RSRP measurements of at least 4 E-UTRAN TDD cells per E-UTRAN TDD frequency for up to 3 E-UTRAN TDD frequencies.

8.1.2.8.3 Periodic reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.8.4 Void

8.1.2.8.5 Event Triggered reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: [2] x TTI_{DCCH}. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{Identify\ E\text{-}UTRAN\ TDD}$ defined in Section 8.1.2.8.1. When L3 filtering is used an additional delay can be expected.

If a cell has been detectable at least for the time period $T_{Identify\ E\text{-}UTRAN\ TDD}$ and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_E\text{-}UTRAN_TDD}$ provided the timing to that cell has not changed more than [FFS] while idel interval has not been available and the L3 filter has not been used.

8.1A General Measurements Requirements in CELL_DCH State (1.28 Mcps option)

8.1A.1 Introduction

This section contains requirements on the UE regarding measurement reporting in CELL_DCH state. The requirements are split in TDD intra frequency, TDD inter frequency, FDD, GSM and E-UTRAN measurements. These measurements may be used by the UTRAN, e.g. for handover decisions. The measurements are defined in TS 25.225, the measurement model is defined in TS 25.302 and measurement accuracies are specified in section 9. Control of measurement reporting is specified in TS 25.331 and parallel measurements are specified in section 8.2A. For the description of the idle intervals see TS 25.225, Annex A.

8.1A.2 Requirements

8.1A.2.1 UE Measurement Capability

The UE shall be able to monitor up to

- 32 intra frequency TDD cells, and
- 32 inter frequency cells, including
 - TDD cells on up to minimum 8 additional TDD carriers, and
 - Depending on UE capability, FDD cells, distributed on up to 3 FDD carriers, and
- Depending on UE capability, 32 GSM cells distributed on up to 32 GSM carriers.
- Depending on UE capability, [32] E-UTRA cells distributed on up to [TBD] E-UTRA carriers

Performance requirements for different types of measurements and different number of cells are defined in the following sections.

The requirements in section 9 are applicable for a UE performing measurements according to this section.

The received P-CCPCH E_c/I_o is defined as

$$\left(\frac{P-CCPCH_E_c}{I_o}\right)\Bigg|_{in\ dB} = \left(\frac{P-CCPCH_E_c}{I_{or}}\right)\Bigg|_{in\ dB} - \frac{I_o}{\left(\hat{I}_{or}\right)}\Bigg|_{in\ dB}$$

The received DwPTS E_c/I_o is defined as

$$\left(\frac{DwPCH_E_c}{I_o}\right)\Bigg|_{in\ dB} = \left(\frac{DwPCH_E_c}{I_{or}}\right)\Bigg|_{in\ dB} - \frac{I_o}{\left(\hat{I}_{or}\right)}\Bigg|_{in\ dB}$$

8.1A.2.2 TDD intra frequency measurements

During the CELL_DCH state the UE shall continuously measure identified intra frequency cells and search for new intra frequency cells in the monitored set. In case the UTRAN requests the UE to report detected set cells, the UE shall also search for intra frequency cells outside the monitored and active set set. Cells, which are neither included in the active set nor in the monitored set, and are identified by the UE belong to the detected set according to TS 25.331. Intra frequency measurements can be performed (simultaneously to data reception from the active cell) in all time slots not used for inter frequency measurements.

8.1A.2.2.1 Identification of a new cell

The UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{identify\ intra} = T_{basic\ identify\ TDD,\ intra} \cdot \frac{N_{Period,\ Intra}}{N_{Intra}}\ ms$$

A cell shall be considered detectable when P-CCPCH Ec/Io $\geq$ -8 dB and DwPCH_Ec/Io $\geq$ -5 dB. When L3 filtering is used an additional delay can be expected.

The UE shall be able to identify a new detectable cell not belonging to the monitored set within

$$T_{identify\ detected\ set} = 30s$$

when P-CCPCH Ec/Io $\geq$ -8 dB, DwPCH_Ec/Io $\geq$ -5 dB. When L3 filtering is used an additional delay can be expected.

8.1A.2.2.2 UE P-CCPCH RSCP measurement capability

In the CELL_DCH state the measurement period for intra frequency P-CCPCH RSCP measurements is 200 ms. When all TS0, DwPTS and main guard periods in the measurement period are scheduled for intra frequency measurements, the UE shall be capable of performing P-CCPCH RSCP measurements for 6 identified intra-frequency cells of the monitored set and the UE physical layer shall be capable of reporting these measurements to higher layers with the measurement period of 200 ms. When inter-frequency measurements required by the network have to be performed during periods of TS0, DwPTS or main guard period, the UE shall be capable of performing P-CCPCH RSCP measurements for at least $Y_{measurement\ intra}$ cells , where $Y_{measurement\ intra}$ is defined in the following equation. The measurement accuracy for all measured cells shall be as specified in the section 9. If the UE has identified more than $Y_{measurement\ intra}$ cells, the UE shall perform measurements of all identified cells but the reporting rate of P-CCPCH RSCP measurements of cells from UE physical layer to higher layers may be decreased.

$$Y_{measurement\ intra} = \text{Floor}\left\{ X_{basic\ measurement\ TDD} \cdot \frac{N_{Intra}}{N_{Period,\ Intra}} \right\}$$

whereby function Floor(x) takes the integer part of x.

$X_{basic\ measurement\ TDD}$= 6 (cells)

$T_{Measurement_Period,\ Intra}$ =200 ms. The measurement period for Intra frequency P-CCPCH RSCP measurements.

$N_{Period,Intra:}$ = 40 Number of subframes in $T_{Measurement_Period,\ Intra.}$

N_{Intra} : This is the minimum number of sub-frame in that the period of TS0, DwPTS and main guard period is available for intra frequency measurements, during the measurement period.

$T_{basic_identify_TDD,\ intra}$ = 800 ms. This is the time period used in the intra frequency equation where the maximum allowed time for the UE to identify a new TDD cell is defined.

The UE shall furthermore be capable of performing P-CCPCH measurements for at least 1 detected intra-frequency cell, in the detected set, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 10 s. The measurement accuracy for all measured cells shall be as specified in the section 9.

8.1A.2.2.2A Timeslot ISCP measurement capability

In the CELL_DCH state the measurement period for intra frequency Timeslot ISCP measurements on arbitrary DL timeslots, including Beacon timeslots is 400 ms. When no inter frequency measurement is scheduled, the UE shall be capable of performing Timeslot ISCP measurements for a total of 5 different combinations of an arbitrary DL timeslot and an intra-frequency cell [16], including the current serving cell. The UE physical layer shall be capable of reporting Timeslot ISCP measurements to higher layers with the measurement period of 400 ms.

When inter-frequency measurements are required by the network, the UE shall be able to perform Timeslot ISCP measurements for at least $Y_{measurement\ intra\ ISCP}$ different combinations, where $Y_{measurement\ intra\ ISCP}$ is defined in the following equation. Any Timeslot ISCP measurement that could not be performed during that measurement period, shall be measured in the following measurement periods. The measurement accuracy of the Timeslot ISCP measurement shall be as specified in the section 9.

$$Y_{measurement\ intra\ ISCP} = Floor\left\{ X_{basic\ measurement\ ISCP} \cdot \frac{T_{Intra}}{T_{Measurement\ Period,\ Intra,\ ISCP}} \right\}$$

whereby function Floor(x) takes the integer part of x.

$X_{basic\ measurement\ ISCP}$ = 5 (combinations of an arbitrary DL timeslot and an intra-frequency cell)

$T_{Measurement_Period,\ Intra,\ ISCP}$ = 400 ms. The measurement period for Intra frequency Timeslot ISCP measurements.

T_{Intra}: This is the minimum time (representing a time corresponding to an integer number of full slots) that is available for intra frequency measurements, during the measurement period with an arbitrarily chosen timing.

8.1A.2.2.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

8.1A.2.2.4 Event-triggered Periodic Reporting

Reported measurements in event triggered periodic measurement reports shall meet the requirements in section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in section 8.1A.2.2.5 Event Triggered Reporting.

8.1A.2.2.5 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report, until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH . The delay uncertainty is twice the TTI of the uplink DCCH.

The event triggered measurement reporting delay, on cells belonging to monitored set, measured without L3 filtering shall be less than $T_{identify\ intra}$ defined in Section 8.1A.2.2.1

If a cell belonging to monitored set has been detectable at least for the time period $T_{identify_intra}$ and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period\ Intra}$ when the L3 filter has not been used and the UE P-CCPCH measurement capabilities of Section 8.1A.2.2.2 are valid.

The event triggered measurement reporting delay on cells not belonging to monitored set, measured without L3 filtering, shall be less than the above defined $T_{identify\ detected\ set\ .}$ defined in Section 8.1A.2.2.1.

8.1A.2.3 TDD inter frequency measurements

When signalled by the network during CELL_DCH state, the UE shall continuously measure identified inter frequency TDD cells and search for new inter frequency TDD cells indicated in the measurement control information.

8.1A.2.3.1 Identification of a new cell

When idle intervals are used for inter-frequency TDD measurements, the UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{identify\ inter} = Max\left\{5000, N_{basic\ identify\ TDD,inter} \cdot \frac{T_{Measurement\ Period,Inter}}{N_{Inter}} \cdot N_{Freq}\right\} ms$$

If the UE does not require idle intervals to perform inter-frequency TDD measurements, the UE shall be able to identify a new detectable inter-frequency TDD cell belonging to the monitored set within 5000 ms.

A cell shall be considered detectable when P-CCPCH Ec/Io $\geq$ -8 dB and DwPCH_Ec/Io $\geq$ -5 dB. When L3 filtering is used an additional delay can be expected.

8.1A.2.3.2 UE P-CCPCH RSCP measurement capability

When idle intervals are used for TDD inter frequency measurements, the UE physical layer shall be capable of reporting P-CCPCH RSCP measurements to higher layers with measurement accuracy as specified in section 9 and with measurement period given by

$$T_{measurement\ inter} = Max\left\{T_{Measurement\ Period,\ Inter}, N_{basic\ measurement\ TDD\ inter} \cdot \frac{T_{Measurement\ Period,\ Inter}}{N_{Inter}} \cdot N_{Freq}\right\} ms$$

If the UE does not require idle intervals to perform TDD inter-frequency measurements, the measurement period for inter frequency P-CCPCH RSCP measurements is 480 ms.

The UE shall be capable of performing P-CCPCH RSCP measurements for $X_{basic\ measurement\ TDD\ inter}$ inter-frequency cells per TDD frequency of the monitored set, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{Measurement_\ Inter.}$

$X_{basic\ measurement\ TDDinter}$ =6

$T_{Measurement_Period\ Inter}$=480 ms. The period used for calculating the measurement period $T_{measurement_inter}$ for inter frequency P-CCPCH RSCP measurements.

N_{Inter}: This is the minimum number of sub-frame in that the signal of P-CCPCH and DwPCH can be received for inter frequency target cell during the period $T_{Measurement_Period\ inter}$ with an arbitrarily chosen timing. It depends on the channel allocation and is calculated by assuming 2*0.1ms for implementation margin (for the description of the idle intervals see Annex A of 25.225).

$T_{basic_identify_TDD,inter}$= 800ms. This is the time period used in the inter frequency equation where the maximum allowed time for the UE to identify a new TDD cell is defined.

$N_{basic\ identify\ TDD,\ Inter}$= 160, Number of subframes in $T_{basic\ identify\ TDD,\ inter.}$

$T_{basic_measurement_TDD\ inter}$ = 50 ms. This is the time period used in the equation for defining the measurement period for inter frequency P-CCPCH RSCP measurements.

$N_{basic\ measurement\ TDD,\ Inter}$= 10, Number of subframes in $T_{basic\ measurement\ TDD\ Inter.}$

N_{Freq} Number of TDD frequencies indicated in the inter frequency measurement control information.

8.1A.2.3.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

8.1A.2.3.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send event triggered measurement reports, as long as the reporting criteria is not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report, until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH . The delay uncertainty is twice the TTI of the uplink DCCH.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify\ inter}$ defined in Section 8.1A.2.3.1. When L3 filtering is used an additional delay can be expected.

8.1A.2.4 FDD measurements

The requirements in this section shall apply to UE supporting 1.28Mcps TDD and FDD.

In the CELL_DCH state when FDD inter frequency measurements are scheduled the UE shall continuously measure identified inter frequency FDD cells and search for new inter frequency FDD cells indicated in the measurement control information.

8.1A.2.4.1 Identification of a new cell

When idle intervals are used for inter-frequency FDD measurements, the UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{identify\ FDD\ \ inter} = Max\left\{5000, T_{basic\ identify\ \ FDD\ inter} \cdot \frac{T_{Measurement\ \ Period\ \ FDD\ inter}}{T_{FDD\ inter}} \cdot N_{Freq}\right\} ms$$

IF the UE does not require idle intervals to perform inter-frequency FDD measurements, the UE shall be able to identify a new detectable inter-frequency FDD cell belonging to the monitored set within 5000 ms.

When L3 filtering is used an additional delay can be expected.

A cell shall be considered detectable when CPICH Ec/Io $\geq$ -20 dB, SCH_Ec/Io $\geq$ -17 dB and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code.

8.1A.2.4.2 UE CPICH measurement capability

When idle intervals are used for FDD inter frequency measurements, the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9 with measurement period given by

$$T_{\text{measurement FDD inter}} = Max\left\{T_{\text{Measurement Period FDD inter}}, T_{\text{basic measurement FDD inter}} \cdot \frac{T_{\text{Measurement Period FDD inter}}}{T_{\text{FDD inter}}} \cdot N_{Freq}\right\} ms$$

If the UE does not need idle intervals to perform FDD measurements, the measurement period for inter frequency measurements is 480 ms.

The UE shall be capable of performing FDD measurements for $X_{\text{basic measurement FDD inter}}$ inter-frequency cells per FDD frequency of the monitored set, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{\text{Measurement_FDDInter.}}$

$X_{\text{basic measurement FDDinter}} = 6$

$T_{\text{Measurement_Period FDD inter}}$ = 480 ms. The period used for calculating the measurement period $T_{\text{measurement_FDD inter}}$ for inter frequency CPICH measurements.

$T_{\text{FDD inter:}}$ This is the minimum time that is available for inter frequency measurements, during the period $T_{\text{Measurement_Period FDD inter}}$ with an arbitrarily chosen timing. The minimum time depends on the channel allocation and is calculated by assuming 2*0.1 ms for implementation margin (for the description of the idle intervals see Annex A of 25.225). It is assumed for the requirement that the slot allocation allows measurement windows in the idle periods to be of minimum duration necessary to perform the measurements.

$T_{\text{basic_identify_FDD,inter}}$ = 800 ms. This is the time period used in the inter frequency equation where the maximum allowed time for the UE to identify a new FDD cell is defined.

$T_{\text{basic_measurement_FDD inter}}$ = 50 ms. This is the time period used in the equation for defining the measurement period for inter frequency CPICH measurements.

N_{Freq}: Number of FDD frequencies indicated in the inter frequency measurement control information.

8.1A.2.4.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

8.1A.2.4.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send event triggered measurement reports as long as the reporting criteria are not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertanty is twice the TTI of the uplink DCCH.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{\text{identify FDD inter}}$ defined in Section 8.1A.2.4.1. When L3 filtering is used an additional delay can be expected.

If a cell has been detectable at least for the time period $T_{identify_FDD\ inter}$ and then enters the reporting range, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period\ FDD\ Inter}$ provided the timing to that cell has not changed more than +/-32 chips while idle intervals have has not been available and the L3 filter has not been used.

8.1A.2.5 GSM measurements

The requirements in this section shall apply to UE supporting 1.28Mcps TDD and GSM.

Measurements on GSM cells can be requested with BSIC verified or BSIC non-verified.

1) For a UE requiring idle intervals to perform GSM measurements. In CELL_DCH state when signalled by UTRAN and when idle intervals are used, the UE shall continuously measure GSM cells and search for new GSM cells given in the monitored set.

2) For a UE not requiring idle intervals to perform GSM measurements:

 - the UE shall measure all GSM cells present in the monitored set

 - the relevant requirements for GSM dedicated mode when a TCH channel is assigned in TS 45.008 shall apply. This is further detailed in the following sub-sections.

8.1A.2.5.1 GSM carrier RSSI

1) For a UE requiring idle intervals to perform GSM measurements

An UE supporting GSM measurements using idle intervals shall meet the minimum number of GSM RSSI carrier measurements specified in table 8.1A.

In the CELL_DCH state the measurement period, $T_{Measurement\ Period,\ GSM}$, for the GSM carrier RSSI measurement is 480 ms.

The UE shall meet the measurement accuracy requirements stated for RXLEV in TS 45.008, when the given measurement time allows the UE to the take at least 3 GSM carrier RSSI samples per GSM carrier in the monitored set during the measurement period.

Table 8.1A

Idle Interval Length (timeslots)	Number of GSM carrier RSSI samples in each idle interval
3	1
4	2
5	3

For the description of the idle intervals see Annex A of 25.225.

In case the UE is not able to acquire the required number of samples per GSM carrier during one measurement period, the UE shall measure as many GSM carriers as possible during that measurement period using at least 3 samples per GSM carrier. The GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods. This means that, in this particular case, the L1 reporting period to higher layers of a GSM neighbour can be a multiple of the measurement period.

2) For a UE not requiring idle intervals to perform GSM measurements

The samples allocated to each carrier shall as far as possible be uniformly distributed over each measurement period. At least 3 received signal level measurement samples are required per RSSI value. The measurement period is 480 ms.

8.1A.2.5.2 BSIC verification

1) For a UE requiring idle intervals to perform GSM measurements

The procedure for BSIC verification on a GSM cell can be divided into the following two tasks:

1) Initial BSIC identification
 Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the relative timing between the TDD and GSM cell. The UE shall trigger the initial BSIC identification within the available idle intervals. The requirements for Initial BSIC identification can be found in section 8.1A.2.5.2.1,"Initial BSIC identification".

2) BSIC re-confirmation
 Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed. The UE shall trigger the BSIC re-confirmation within the available idle intervals. The requirements for BSIC re-confirmation can be found in section 8.1A.2.5.2.2, "BSIC re-confirmation".

Measurements on a GSM cell can be requested with BSIC verified or BSIC non-verified. If GSM measurements are requested with BSIC verified the UE shall be able to report the GSM cells with BSIC verified for those cells where the verification of BSIC has been successful.

The UE shall use the last available GSM carrier RSSI measurement results for arranging GSM cells in signal strength order for performing BSIC identification. The UE shall perform event evaluation for event-triggered reporting after the BSIC has been verified for a GSM cell. The UE shall use the last available GSM carrier RSSI measurement results in event evaluation and event-triggered reporting. Periodic reports shall be triggered according to Sections 8.6.7.5 and 8.6.7.6 of [16]

The BSIC of a GSM cell is considered to be "verified" if the UE has decoded the SCH of the BCCH carrier and identified the BSIC at least one time (initial BSIC identification) and from that moment the BSIC shall be re-confirmed at least once every $T_{\text{re-confirm abort}}$ seconds. Otherwise the BSIC of the GSM cell is considered as "non-verified". The time requirement for initial BSIC identification, $T_{\text{identify abort}}$, and the BSIC re-confirmation interval $T_{\text{re-confirm abort}}$ can be found in the sections below.

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in TS 45.005.

2) For a UE not requiring idle intervals to perform GSM measurements

If a BSIC is decoded and matches the expected value, it is considered as "verified", else it is considered as "non verified".

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in TS 45.005.

8.1A.2.5.2.1 Initial BSIC identification

For GSM cells that are requested with BSIC verified the UE shall attempt to decode the SCH on the BCCH carrier of the8 strongest BCCH carriers of the GSM cells indicated in the measurement control information. The UE shall give priority for BSIC decoding attempts in decreasing signal strength order to BSIC carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value after layer 3 filtering. The GSM signal strength levels used in BSIC identification for arranging GSM cells in signal strength order shall be based on the latest GSM carrier RSSI measurement results available.

If the BSIC of a GSM BCCH carriers has been successfully decoded the UE shall immediately continue BSIC identification with the next BCCH carrier, in signal strength order, with unknown BSIC. The GSM cell for which the BSIC has been successfully identified shall be moved to the BSIC re-confirmation procedure.

If the UE has not successfully decoded the BSIC of the GSM BCCH carrier within $T_{\text{identify abort}}$, the UE shall abort the BSIC identification attempts for that GSMBCCH carrier. The UE shall continue to try to perform BSIC identification of the next GSM BCCH carrier in signal strength order. The GSM BCCH carrier for which the BSIC identification failed shall not be re-considered for BSIC identification until BSIC decoding attempts have been made for all the rest of the 8 strongest GSM BCCH carriers in the monitored set with unknown BSIC.

$T_{\text{identify abort}}$ = 5000 ms. This is the time necessary to identify one new GSM cell. It is assumed for the requirement that the slot allocation allows measurement windows in the idle periods to be of minimum duration necessary to perform the measurements.

8.1A.2.5.2.2 BSIC re-confirmation

The requirements of this section are applicable for BSIC re-confirmation.

The UE shall maintain the timing information of at least 8 identified GSM cells. Initial timing information is obtained from the initial BSIC identification. The timing information shall be updated every time the BSIC is decoded.

For each idle interval, the UE is able to use for BSIC re-confirmation, the UE shall attempt to decode the BSIC falling within the effective measurement window. If more than one BSIC can be decoded within the same measurement window given by the idle intervals, priority shall be given to the least recently decoded BSIC.

If the UE fails to decode the BSIC after two successive attempts or if the UE has not been able to re-confirm the BSIC for a GSM BCCH carrier within $T_{re\text{-}confirm_abort}$ seconds, the UE shall abort the BSIC re-confirmation attempts for that GSM BCCH carrier. The GSM BCCH carrier shall be treated as a new GSM BCCH carrier with unidentified BSIC and the GSM BCCH carrier shall be moved to the initial BSIC decoding procedure, see section 8.1A.2.5.2.1. The UE shall be able to make BSIC re-confirmation attempts for the 8 strongest GSM cells in the monitored list.

$T_{re\text{-}confirm\ abort}$ =5000 ms. This is the BSIC reconfirmation interval.

It is assumed for the requirement that the slot allocation allows measurement windows in the idle periods to be of minimum duration necessary to perform the measurements.

8.1A.2.5.2.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

8.1A.2.5.2.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as the reporting criteria is not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH.

The event triggered reporting delay requirement is valid when the UE for each GSM carrier in the monitored set can take the required number of samples during the measurement period $T_{Measurement\ Period,\ GSM}$ (see section 8.1A.2.5.1).

The event triggered measurement reporting delay for a GSM cell with verified BSIC, measured without L3 filtering shall be less than $2*T_{Measurement\ Period,\ GSM}$, where $T_{Measurement\ Period,\ GSM}$ is defined in Section 8.1A.2.5.1. When L3 filtering is used an additional delay can be expected. For a GSM cell with non-verified BSIC an additional delay according to section 8.1A.2.5.2.1 Initial BSIC identification can be expected.

8.1A.2.6 E-UTRAN FDD measurements

The requirements in this section apply only to UEs supporting 1.28Mcps TDD and E-UTRAN FDD.

1) For a UE requiring idle intervals to perform E-UTRAN FDD measurements:

 - a minimum idle interval of 6ms shall be scheduled by the network.

 - when signalled by UTRAN, the UE shall continuously measure previously detected E-UTRAN FDD cells and search for new E-UTRAN FDD cells.

2) For a UE not requiring idle intervals to perform E-UTRAN FDD measurements:

 - the UE shall measure either all E-UTRAN FDD cells present in the monitored set or, if only frequencies are provided in the neighbour cell list, the strongest cells present in the detected set, up to the monitoring capabilities of the UE.

 - the relevant requirements for E-UTRAN FDD dedicated mode when a [TBD] channel is assigned in 3GPP TS 36.133 [24] shall apply. This is further detailed in the following subclauses.

8.1A.2.6.1 Identification of a new cell

When idle intervals are used for E-UTRAN FDD measurements, the UE shall be able to identify a new detectable E-UTRAN FDD cell within

$$T_{\text{Identify E-UTRAN FDD}} = T_{\text{Basic_Identify_E-UTRAN FDD}} \cdot \frac{T_{\text{Measurement_Period_E-UTRAN FDD}}}{T_{\text{E-UTRAN FDD}}} \quad ms$$

;

If the UE does not need idle intervals to perform E-UTRAN FDD measurements, the UE shall be able to identify a new detectable E-UTRAN FDD cell within $T_{\text{Basic_Identify_E-UTRAN FDD}}$ ms.

Where:

$T_{\text{E-UTRAN FDD}}$: This is the minimum time that is available for E-UTRAN FDD measurements during the measurement period $T_{\text{Measurement_Period_E-UTRAN FDD}}$ with an arbitrarily chosen timing. The minimum time per idle interval is calculated by assuming 2*0.5 ms for implementation margin.

$T_{\text{Basic_Identify_E-UTRAN FDD}}$ = 480 ms

When L3 filtering is used an additional delay can be expected.

An E-UTRAN FDD cell shall be considered detectable when

- RSRP related side condition given in Section 9.1 of [24] are fulfilled for a corresponding Band,
- $SCH_RP|_{dBm} \geq$ -127 dBm for Bands 1, 4, 6, 10, defined in [26] and $SCH_E_S/Iot \geq$ -4 dB,
- $SCH_RP|_{dBm} \geq$ -126 dBm for Band 9 defined in [26] and $SCH_E_S/Iot \geq$ -4 dB,
- $SCH_RP|_{dBm} \geq$ -125 dBm for Bands 2, 5, 7 , 11, 17 defined in [26] and $SCH_E_S/Iot \geq$ -4 dB,
- $SCH_RP|_{dBm} \geq$ -124 dBm for Bands 3, 8, 12, 13, 14 defined in [26] and $SCH_E_S/Iot \geq$ -4 dB.

8.1A.2.6.2 E-UTRAN RSRP and RSRQ measurement period

When idle intervals are scheduled for E-UTRAN FDD measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.1.5a and 9.1.1.5b with measurement period of $T_{\text{Measurement_Period_E-UTRAN FDD}} = 480 \times N_{\text{Freq}}$ ms where N_{Freq} is the number of FDD frequencies indicated in the E-UTRAN measurement control information.

The UE shall be capable of performing RSRP measurements of at least 4 E-UTRAN FDD cells per E-UTRAN FDD frequency for up to 3 FDD E-UTRAN frequencies.

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

8.1A.2.6.4 void

8.1A.2.6.5 Event Triggered reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH . The delay

uncertainty is: [2] x TTI_{DCCH}. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify\ E\text{-}UTRAN\ FDD}$ defined in Section 8.1A.2.6.1. When L3 filtering is used an additional delay can be expected.

If a cell has been detectable at least for the time period $T_{identify\ E\text{-}UTRAN\ FDD}$ and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_E\text{-}UTRAN_FDD}$ provided the timing to that cell has not changed more than [FFS] while idle interval has not been available and the L3 filter has not been used.

8.1A.2.7 E-UTRAN TDD measurements

The requirements in this section apply only to UEs supporting 1.28Mcps TDD and E-UTRAN TDD.

1) For a UE requiring idle intervals to perform E-UTRAN TDD measurements:

 - a minimum idle interval of 6ms shall be scheduled by the network.

 - when signalled by UTRAN, the UE shall continuously measure previously detected E-UTRAN TDD cells and search for new E-UTRAN TDD cells.

2) For a UE not requiring idle intervals to perform E-UTRAN TDD measurements:

 - the UE shall measure either all E-UTRAN TDD cells present in the monitored set or, if only frequencies are provided in the neighbour cell list, the strongest cells present in the detected set, up to the monitoring capabilities of the UE.

 - the relevant requirements for E-UTRAN TDD dedicated mode when a [TBD] channel is assigned in 3GPP TS 36.133 [24] shall apply. This is further detailed in the following subclauses.

8.1A.2.7.1 Identification of a new cell

When idle intervals are used for E-UTRAN measurements, the UE shall be able to identify a new detectable E-UTRAN TDD cell within

$$T_{Identify\ E\text{-}UTRAN\ TDD} = T_{Basic_Identify_E\text{-}UTRAN\ TDD} \cdot \frac{T_{Measurement_Period_E\text{-}UTRAN\ TDD}}{T_{E\text{-}UTRAN\ TDD}} \quad ms;$$

If the UE does not need idle intervals to perform E-UTRAN TDD measurements, the UE shall be able to identify a new detectable E-UTRAN TDD cell within $T_{Basic_Identify_E\text{-}UTRAN\ TDD}$ ms.

Where:

$T_{E\text{-}UTRAN\ TDD}$: This is the minimum time that is available for E-UTRAN TDD measurements during the measurement period $T_{Measurement_Period_E\text{-}UTRAN\ TDD}$ with an arbitrarily chosen timing. The minimum time per idle interval is calculated by assuming 2*0.5 ms for implementation margin.

$T_{Basic_Identify_E\text{-}UTRAN\ TDD}$ = 480 ms

When L3 filtering is used an additional delay can be expected.

An E-UTRAN TDD cell shall be considered detectable when

- RSRP related side condition given in Section 9.1 of [24] are fulfilled for a corresponding Band,

- $SCH_RP|_{dBm} \geq$ -127 dBm for Bands33, 34, 35, 36, 37, 38, 39 and 40 defined in [26] and SCH $\hat{E}s/Iot \geq$ -4 dB,

8.1A.2.7.2 E-UTRAN RSRP and RSRQ measurement period

When idle intervals are scheduled for E-UTRAN TDD measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.1.5a and 9.1.1.5b with measurement period of $T_{Measurement_Period_E\text{-}UTRAN\ TDD}$ = 480 x N_{Freq} ms where N_{Freq} is the number of TDD frequencies indicated in the E-UTRAN measurement control information.

The UE shall be capable of performing RSRP measurements of at least 4 E-UTRAN TDD cells per E-UTRAN TDD frequency for up to 3 E-UTRAN TDD frequencies.

8.1A.2.7.3 Periodic reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

8.1A.2.7.4 void

8.1A.2.7.5 Event Triggered reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH . The delay uncertainty is: [2] x TTI_{DCCH}. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{Identify\ E\text{-}UTRAN\ TDD}$ defined in Section 8.1A.2.7.1. When L3 filtering is used an additional delay can be expected.

If a cell has been detectable at least for the time period $T_{Identify\ E\text{-}UTRAN\ TDD}$ and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_E\text{-}UTRAN_TDD}$ provided the timing to that cell has not changed more than [FFS] while idel interval has not been available and the L3 filter has not been used.

8.1B General Measurement Requirements in CELL_DCH State (7.68 Mcps option)

8.1B.1 Introduction

This section contains requirements on the UE regarding measurement reporting in CELL_DCH state. The requirements are split in TDD intra frequency, TDD inter frequency, FDD and GSM measurements. These measurements may be used by the UTRAN, e.g. for handover decisions. The measurements are defined in [14], the measurement model is defined in [15] and measurement accuracies are specified in section 9. Control of measurement reporting is specified in [16] and parallel measurements are specified in section 8.2B. For the description of the idle intervals see [14].

8.1B.2 Requirements

8.1B.2.1 UE Measurement Capability

The UE shall be able to monitor up to

- 32 intra frequency TDD cells (including serving cell), and
- 32 inter frequency cells, including
 - TDD mode cells distributed on up to 2 additional TDD carriers and
 - Depending on UE capability, FDD mode cells, distributed on up to 3 FDD carriers.
- Depending on UE capability, 32 inter RAT GSM cells.
- Depending on UE capability, [32] E-UTRA cells distributed on up to [TBD] E-UTRA carriers

The requirements in section 9 are applicable for a UE performing measurements according to this section.

For measurements on intra- and inter-frequency TDD, inter-frequency FDD and GSM cells, idle intervals as described in [14] can be used. The time $T_{measure}$ per 480 ms period available for these measurements is the sum of the duration of all idle intervals during any given 480 ms period, i.e. the amount of time not used by the UE for receiving in active DL timeslots or for transmission in active UL timeslots. Note that Beacon timeslots of the serving cell can be located inside idle intervals and that implementation margin due to frequency switching is not taken into account for $T_{measure}$.

The requirements in this section are based upon the assumption, that the time durations T_{intra} and T_{inter} during any given 480 ms period for the purpose of measurements on intra-frequency TDD cells and for measurements on inter-frequency TDD, inter-frequency FDD and GSM cells are respectively,

$$T_{intra} = \left[96 + 24 \cdot \text{Floor}\left\{ \frac{M_{intra} + 3}{4} \right\} \right] \text{ ms}$$

$$T_{inter} = 480 \text{ ms} - T_{intra}$$

where, M_{intra} is equal to the number of intra-frequency TDD cells in the neighbour list

The time duration T_{inter} shall be equally shared for inter-frequency measurements on the different modes and systems which the UE has capability for and that are in the monitored set signalled by UTRAN, i.e.

$$T_{inter} = N_{TDD} \cdot T_{TDD\ inter} + N_{FDD} \cdot T_{FDD\ inter} + N_{GSM} \cdot T_{GSM\ inter}$$

For this, the following parameters are defined,

$T_{TDD\ inter}$ is the time duration allocated for the purpose of TDD inter-frequency measurements.

$T_{FDD\ inter}$ is the time duration allocated for the purpose of FDD inter-frequency measurements.

$T_{GSM\ inter}$ is the time duration allocated for the purpose of GSM measurements.

N_{TDD} is equal to 1 if there are inter-frequency TDD cells in the neighbour list, equal to 0 otherwise.

N_{FDD} is equal to 1 if the UE has capability for FDD and if there are inter-frequency FDD cells in the neighbour list, equal to 0 otherwise.

N_{GSM} is equal to 1 if the UE has capability for GSM and if there are GSM cells in the neighbour list, equal to 0 otherwise.

8.1B.2.2 TDD intra frequency measurements

During the CELL_DCH state, the UE shall continuously measure identified intra frequency TDD cells and search for new intra frequency TDD cells in the monitored set. In case the UTRAN requests the UE to report detected set cells, the UE shall also search for intra frequency TDD cells outside the monitored and active set. Cells, which are neither included in the active set nor in the monitored set, and are identified by the UE belong to the detected set according to [16].

In order for the requirements in the following subsections to apply, the Beacon timeslots of the intra-frequency TDD cells indicated in the measurement control information shall either be synchronised with the Beacon timeslots of the serving cell or non-overlapping in time with the active UL timeslots used by the UE for transmission, such that the UE can measure an intra-frequency TDD cell at least once every frame for the slot allocation case in use in this cell. The UE shall be capable of intra frequency measurements during active DL timeslots.

8.1B.2.2.1 Identification of a new cell

The UE shall be able to identify a new detectable intra-frequency TDD cell belonging to the monitored set within $T_{identify\ intra}$ ms, where $T_{identify\ intra}$ = 800 ms.

When L3 filtering is used, an additional delay can be expected.

8.1B.2.2.2 UE P-CCPCH RSCP measurement capability

In CELL_DCH state, the UE shall be capable of performing P-CCPCH RSCP measurements for $X_{measurement\ intra}$ identified intra-frequency TDD cells of the monitored set with a measurement period for intra-frequency P-CCPCH RSCP measurements $T_{measurement\ period\ intra,}$ where

$X_{measurement\ intra}$ = 6 (cells)

$T_{measurement\ period\ intra}$ = 200 ms

The UE physical layer shall be capable of reporting these measurements to higher layers with the measurement period $T_{measurement\ period\ intra}$.

If the UE has identified more than $X_{measurement\ intra}$ intra-frequency TDD cells, the UE shall perform measurements of all identified cells but the reporting rate of P-CCPCH RSCP measurements of cells from the UE physical layer to higher layers may be decreased.. The measurement accuracy for all measured cells shall be as specified in the section 9.

8.1B.2.2.3 Timeslot ISCP measurement capability

In CELL_DCH state the measurement period for intra frequency Timeslot ISCP measurements on arbitrary DL timeslots, including Beacon timeslots is 400 ms. When no inter frequency measurement is scheduled, the UE shall be capable of performing Timeslot ISCP measurements for a total of 10 different combinations of an arbitrary DL timeslot and an intra-frequency cell [16], including the current serving cell. The UE physical layer shall be capable of reporting Timeslot ISCP measurements to higher layers with the measurement period of 400 ms.

When inter-frequency measurements are required by the network, the UE shall be capable of performing Timeslot ISCP measurements for at least $Y_{measurement\ intra\ ISCP}$ different combinations, where $Y_{measurement\ intra\ ISCP}$ is defined in the following equation. Any Timeslot ISCP measurement that could not be performed during that measurement period, shall be measured in the following measurement periods. The measurement accuracy of the Timeslot ISCP measurement shall be as specified in the section 9.

$$Y_{measurement\ intra\ ISCP} = Floor\left\{ X_{basic\ measurement\ ISCP} \cdot \frac{5}{6} \frac{T_{intra}}{T_{measurement\ period\ intra\ ISCP}} \right\}$$

whereby function Floor(x) takes the integer part of x.

- $X_{basic\ measurement\ ISCP}$ = 10 (combinations of an arbitrary DL timeslot and an intra-frequency cell)
- $T_{measurement_period,\ intra,\ ISCP}$ = 400 ms. The measurement period for intra frequency Timeslot ISCP measurements.
- T_{intra} is specified in 8.1B.2.1.

8.1B.2.2.4 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

8.1B.2.2.5 Event-triggered Periodic Reporting

Reported measurements in event triggered periodic measurement reports shall meet the requirements in section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in section 8.1B.2.2.6 Event Triggered Reporting.

8.1B.2.2.6 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report, until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay

uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH . The delay uncertainty is twice the TTI of the uplink DCCH.

For P-CCPCH RSCP measurements, the event triggered measurement reporting delay, on cells belonging to the monitored set, measured without L3 filtering shall be less than $T_{identify\ intra}$ defined in Section 8.1B.2.2.1. When L3 filtering is used an additional delay can be expected..

If a cell, belonging to the monitored set has been detectable at least for the time period $T_{identify\ intra}$ and then enters the reporting range, the event triggered P-CCPCH RSCP measurement reporting delay shall be less than $T_{measurement_period\ intra}$ when the L3 filter has not been used and the UE P-CCPCH RSCP measurement capabilities of section 8.1B.2.2.1 are valid.

8.1B.2.3 TDD inter frequency measurements

When signalled by UTRAN during CELL_DCH state, the UE shall continuously measure detected inter-frequency TDD cells and search for new inter-frequency TDD cells indicated in the measurement control information.

In order for the requirements in the following subsections to apply, the Beacon timeslots of the inter-frequency TDD cells indicated in the measurement control information shall be non-overlapping in time with the active DL and UL timeslots used by the UE for reception and transmission such that the UE can measure an inter-frequency cell TDD cell at least once every frame for the slot allocation case in use in this cell and by assuming 2*0.5 ms implementation margin for frequency switching per idle interval.

8.1B.2.3.1 Identification of a new cell

When idle intervals are used for inter-frequency TDD measurements, the UE shall be able to identify a new detectable inter-frequency TDD cell belonging to the monitored set within

$$T_{identify\ inter} = Max\left\{ 5000, N_{basic\ identify\ TDD\ inter} \cdot \frac{T_{measurement\ period\ TDD\ inter}}{N_{TDD\ inter}} \cdot N_{Freq} \right\} ms$$

If the UE does not require idle intervals to perform inter-frequency TDD measurements, the UE shall be able to identify a new detectable inter-frequency TDD cell belonging to the monitored set within 5000 ms.

When L3 filtering is used, an additional delay can be expected.

8.1B.2.3.2 P-CCPCH RSCP measurement period

When idle intervals are used for TDD inter frequency measurements, the UE shall be capable of performing P-CCPCH RSCP measurements for $X_{measurement\ TDD\ inter}$ inter-frequency TDD cells per TDD frequency of the monitored set.

The UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in section 9 and with a measurement period of $T_{measurement\ inter}$.

$$T_{measurement\ inter} = Max\left\{ T_{measurement\ period\ TDD\ inter}, N_{basic\ measurement\ TDD\ inter} \cdot \frac{T_{measurement\ period\ TDD\ inter}}{N_{TDD\ inter}} \cdot N_{Freq} \right\} ms$$

If the UE does not require idle intervals to perform TDD inter-frequency measurements, the measurement period for inter frequency P-CCPCH RSCP measurements shall be 480 ms.

Where,

$X_{measurement\ TDD\ inter}$ = 6 (cells)

$T_{measurement_period\ inter}$ = 480 ms. The time period used for calculating the measurement period $T_{measurement_inter}$ for inter frequency P-CCPCH RSCP measurements.

$N_{TDD\ inter}$: This is the available number of measurement opportunities for a Beacon timeslot of an inter-frequency TDD cell during the time period $T_{TDD\ inter}$. The UE shall consider that a measurement opportunity on a Beacon timeslot of an inter-frequency TDD cell is provided if an idle interval of length equal to or greater than 3

timeslots less 2*0.5 ms implementation margin for frequency switching per idle interval completely overlaps in time with the Beacon timeslot of the inter-frequency TDD cell.

$N_{basic_identify_TDD\ inter}$ = 80. This is a number of measurement opportunities for a Beacon timeslot of an inter-frequency TDD cell during the time period used in the inter frequency TDD equation where the maximum allowed time for the UE to identify a new detectable inter-frequency TDD cell is defined.

$N_{basic_measurement_TDD\ inter}$ = 5. This is a number of measurement opportunities for a Beacon timeslot of an inter-frequency TDD cell during the time period $T_{TDD\ inter}$ used in the inter-frequency TDD equation where the measurement period for inter-frequency P-CCPCH RSCP measurements is defined.

$N_{Freq\ TDD}$: This is the number of TDD frequencies indicated in the inter frequency measurement control information.

Note that the number of measurement opportunities available to the UE depends on UL and DL timeslot assignments for transmission and reception and on Beacon timeslot allocations in the inter-frequency TDD cells.

8.1B.2.3.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

8.1B.2.3.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send event triggered measurement reports, as long as the reporting criteria is not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report, until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH . The delay uncertainty is twice the TTI of the uplink DCCH.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify\ inter}$ defined in Section 8.1B.2.3.1 When L3 filtering is used an additional delay can be expected.

If an intra frequency TDD cell has been detectable at least for the time period $T_{identify_\ inter}$ and then enters the reporting range, the event triggered measurement reporting delay shall be less than $T_{measurement_period\ inter}$ when the L3 filter has not been used.

8.1B.2.4 FDD measurements

The requirements in this section shall apply to UE supporting TDD and FDD.

In the CELL_DCH state when FDD inter frequency measurements are scheduled the UE shall continuously measure detected inter frequency FDD cells and search for new inter frequency FDD cells indicated in the measurement control information.

8.1B.2.4.1 Identification of a new cell

When idle intervals are used for inter-frequency FDD measurements, the UE shall be able to identify a new detectable inter-frequency FDD cell belonging to the monitored set within

$$T_{identify\ \ FDD\ inter} = Max\left\{5000, T_{basic\ identify\ \ FDD\ inter} \cdot \frac{T_{measurement\ \ period\ FDD\ inter}}{T_{FDD\ inter}} \cdot N_{Freq}\right\} ms$$

If the UE does not require idle intervals to perform FDD inter-frequency measurements, the UE shall be able to identify a new detectable inter-frequency FDD cell belonging to the monitored set within 5000 ms.

When L3 filtering is used an additional delay can be expected.

An inter-frequency FDD cell shall be considered detectable, when CPICH Ec/Io $\geq$ -20 dB, SCH_Ec/Io $\geq$ -17 dB and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code.

8.1B.2.4.2 UE CPICH measurement capability

When idle intervals are used for FDD inter frequency measurements, the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9 with measurement period given by

$$T_{\text{measurement FDD inter}} = Max\left\{ T_{\text{measurement period FDD inter}}, T_{\text{basic measurement FDD inter}} \cdot \frac{T_{\text{measurement period FDD inter}}}{T_{\text{FDD inter available}}} \cdot N_{Freq,FDD} \right\} ms$$

If the UE does not require idle intervals to perform FDD inter-frequency measurements, the measurement period for inter frequency CPICH measurements shall be 480 ms.

The UE shall be capable of performing CPICH measurements for $X_{\text{measurement FDD inter}}$ inter-frequency FDD cells per frequency of the monitored set and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{\text{measurement FDD inter}}$.

$X_{\text{basic measurement FDD inter}}$ = 6 (cells)

$T_{\text{measurement_period FDD inter}}$ = 480 ms. The time period used for calculating the measurement period $T_{\text{measurement_FDD inter}}$ for inter frequency CPICH measurements.

$T_{\text{FDD inter: available}}$: This is the available time for measurements on inter-frequency FDD cells. $T_{\text{FDD inter available}}$ shall be derived from $T_{\text{FDD inter}}$ by assuming 2*0.5 ms implementation margin for frequency switching per idle interval and by only taking into account the remaining number of full timeslots per idle interval. Idle intervals smaller than 3 timeslots shall not be taken into account for calculating $T_{\text{FDD inter available}}$.

$T_{\text{basic_identify_FDD inter}}$ = 800 ms. This is the time period used in the inter frequency equation where the maximum allowed time for the UE to identify a new detectable inter-frequency FDD cell is defined.

$T_{\text{basic_measurement_FDD inter}}$ = 50 ms. This is the time period used in the inter-frequency equation for defining the measurement period for inter frequency CPICH measurements.

N_{Freq}: This is the number of FDD frequencies indicated in the inter frequency measurement control information.

8.1B.2.4.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

8.1B.2.4.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send event triggered measurement reports as long as the reporting criteria are not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertanty is twice the TTI of the uplink DCCH.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{\text{identify FDD inter}}$ defined in Section 8.1B.2.4.1. When L3 filtering is used an additional delay can be expected.

If an inter frequency FDD cell has been detectable at least for the time period $T_{\text{identify_FDD inter}}$ and then enters the reporting range, the event triggered measurement reporting delay shall be less than $T_{\text{measurement_period FDD inter}}$ provided the timing to that cell has not changed more than +/-32 chips during the time period $T_{\text{identify FDD inter}}$ and the L3 filter has not been used.

8.1B.2.5 GSM measurements

The requirements in this section shall apply to UE supporting TDD and GSM.

In CELL_DCH state, measurements opportunities for GSM measurements are provided by means of idle intervals.

Measurements on GSM cells can be requested with BSIC verified or BSIC non-verified.

a) In CELL_DCH state, when signaled by UTRAN and when idle intervals are used for GSM measurements, the UE shall continuously measure GSM cells and search for new GSM cells given in the monitored set.

 - In section 8.1B.2.1 the split of measurements between different modes and systems is defined. Every second measurement opportunity scheduled for GSM measurements, as given by 8.1B.2.1 shall be allocated for GSM initial BSIC identification.

 - The remaining measurements opportunities scheduled for GSM measurements shall be used as follows. 3 measurement opportunities out of 4 shall be allocated for GSM carrier RSSI measurements and 1 out of 4 shall be allocated for GSM BSIC reconfirmation. The scheduling of measurement opportunities between GSM carrier RSSI measurements and GSM BSIC reconfirmation is up to the UE.

b) In CELL_DCH state, when signaled by UTRAN and when the UE does not need idle intervals to perform GSM measurements, the UE shall measure all GSM cells present in the monitored set

 - the relevant requirements for GSM dedicated mode when a TCH channel is assigned in [21] shall apply. This is further detailed in the following sub-sections.

8.1B.2.5.1 GSM carrier RSSI

a) For a UE using idle intervals to perform GSM measurements

A UE supporting GSM measurements using idle intervals shall meet the minimum number of GSM carrier RSSI measurements specified in table 8.1B.

In the CELL_DCH state the measurement period, $T_{measurement\ period\ GSM}$, for the GSM carrier RSSI measurement is 480 ms.

The UE shall meet the measurement accuracy requirements stated for RXLEV in [21], when the given measurement time allows the UE to the take at least 3 GSM carrier RSSI samples per GSM carrier in the monitored set during the measurement period.

Table 8.1B

Idle interval length (timeslots)	Number of GSM carrier RSSI samples in each idle interval
3	1
4	2
5	3
6	4
7	6
8	7
9	8
10	10
11	11
12	12
13	14

In case the UE is not able to acquire the required number of samples per GSM carrier during one measurement period, the UE shall measure as many GSM carriers as possible during that measurement period using at least 3 samples per GSM carrier. The GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods. This means that, in this particular case, the L1 reporting period to higher layers of a GSM neighbour can be a multiple of the measurement period.

b) For a UE not using idle intervals to perform GSM measurements

The samples allocated to each carrier shall as far as possible be uniformly distributed over each measurement period. At least 3 received signal level measurement samples are required per GSM carrier RSSI measurement. The measurement period shall be 480 ms.

8.1B.2.5.2 BSIC verification

a) For a UE using idle intervals to perform GSM measurements

The procedure for BSIC verification on a GSM cell can be divided into the following two tasks:

1) Initial BSIC identification: Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the relative timing between the TDD and GSM cell.. The requirements for Initial BSIC identification can be found in section 8.1B.2.5.2.1.

2) BSIC re-confirmation: Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed.. The requirements for Initial BSIC identification can be found in section 8.1B.2.5.2.2.

Measurements on a GSM cell can be requested with BSIC verified or BSIC non-verified. If GSM measurements are requested with BSIC verified, the UE shall be able to report the GSM cells with BSIC verified for those cells where the verification of BSIC has been successful.

If the UTRAN requests measurements on a GSM cell with BSIC verified, the UE shall behave as follows:

- The UE shall perform GSM carrier RSSI measurements according to Section 8.1B.2.5.1 and the UE shall perform measurement reporting as defined in Section 8.6.7.6 of [16].

- The UE shall use the last available GSM carrier RSSI measurement results for arranging GSM cells in signal strength order for performing BSIC identification.

- The UE shall perform BSIC re-confirmation according to Section 8.1B.2.5.2.2

The UE shall perform event evaluation for event-triggered reporting after the BSIC has been verified for a GSM cell. The UE shall use the last available GSM carrier RSSI measurement results in event evaluation and event-triggered reporting. Periodic reports shall be triggered according to the given reporting period even if the BSIC of a GSM cell has not been verified as defined in Sections 8.6.7.5 and 8.6.7.6 of [16]. Non verified BSIC shall be indicated in the measurement report.

The UE shall consider the BSIC of a GSM cell to be "verified", if it has decoded the SCH of the BCCH carrier and identified the BSIC at least one time (initial BSIC identification). From that time instant, the UE shall attempt to re-confirm the BSIC at least once every $T_{\text{re-confirm abort}}$ seconds. Otherwise, the UE shall consider the BSIC of the GSM cell to be "non-verified".

The time requirement for initial BSIC identification, $T_{\text{identify abort}}$, and the BSIC re-confirmation interval $T_{\text{re-confirm abort}}$ can be found in the sections below.

The UE shall be able to decode a BSIC for the purpose of initial BSIC identification or BSIC reconfirmation within an idle interval, when the time difference between the middle of the received GSM synchronisation burst at the UE and the middle of the idle interval is within the limits specified in Table 8.1C.

Table 8.1C

Idle Interval Length (timeslots)	Maximum time difference [μs]
3	± 65
4	± 398
5	± 732
6	± 1065
7	± 1398
8	± 1732
9	± 2065
10	± 2398
11	± 2732
12	± 3065
13	± 3398

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in [20].

b) For a UE not using idle intervals to perform GSM measurements

If a BSIC is decoded and matches the expected value, the UE shall consider it as "verified", otherwise it shall consider it as "non-verified".

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in [20].

8.1B.2.5.2.1 Initial BSIC identification

For GSM cells that are requested with BSIC verified the UE shall attempt to decode the SCH on the BCCH carrier of the 8 strongest BCCH carriers of the GSM cells indicated in the measurement control information. The UE shall give priority for BSIC decodingattempts in decreasing signal strength order to BSIC carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value after layer 3 filtering. The GSM signal strength levels used in BSIC identification for arranging GSM cells in signal strength order shall be based on the latest GSM carrier RSSI measurement results available.

If the BSIC of a GSM BCCH carriers has been successfully decoded the UE shall inmediately continue BSIC identification with the next BCCH carrier, in signal strength order, with unknown BSIC. The GSM cell for which the BSIC has been successfully identified shall be moved to the BSIC re-confirmation procedure.

If the UE has not successfully decoded the BSIC of the GSM BCCH carrier within $T_{identify\ abort}$, the UE shall abort the BSIC decoding attempts for that GSMBCCH carrier. The UE shall continue to try to perform BSIC decoding of the next GSM BCCH carrier in signal strength order. The GSM BCCH carrier for which the BSIC decoding failed shall not be re-considered for BSIC decoding until BSIC decoding attempts have been made for all the rest of the 8 strongest GSM BCCH carriers in the monitored set with unknown BSIC.

Where $T_{identify\ abort}$ = 5000 ms.

8.1B.2.5.2.2 BSIC re-confirmation

The requirements of this section are applicable for BSIC re-confirmation.

The UE shall maintain the timing information of at least 8 identified GSM cells. Initial timing information is obtained from the initial BSIC decoding. The timing information shall be updated every time the BSIC is decoded.

If more than one BSIC can be decoded within the same measurement window given by the idle intervals, priority shall be given to the least recently decoded BSIC.

If the UE fails to decode the BSIC after two successive attempts or if the UE has not been able to re-confirm the BSIC for a GSM BCCH carrier within $T_{re\text{-}confirm_abort}$ seconds, the UE shall abort the BSIC re-confirmation attempts for that GSM BCCH carrier. The GSM BCCH carrier shall be treated as a new GSM BCCH carrier with unidentified BSIC and the GSM BCCH carrier shall be moved to the initial BSIC decoding procedure, see section 8.1B.2.5.2.1. The UE shall be able to make BSIC re-confirmation attempts for the 8 strongest GSM cells in the monitored list.

Where $T_{re\text{-}confirm\ abort}$ =5000 ms.

8.1B.2.5.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

8.1B.2.5.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as the reporting criteria is not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH.

The event triggered reporting delay requirement is valid, when the UE for each GSM carrier in the monitored set can take the required number of samples during the measurement period $T_{measurement\ period\ GSM}$ (see section 8.1B.2.5.1).

The event triggered measurement reporting delay for a GSM cell with verified BSIC, measured without L3 filtering shall be less than $2*T_{measurement\ period\ GSM}$, where $T_{measurement\ period\ GSM}$ is defined in Section 8.1B.2.5.1. When L3 filtering is used an additional delay can be expected. For a GSM cell with non-verified BSIC an additional delay according to section 8.1B.2.5.2.1 Initial BSIC identification can be expected.

8.1B.2.6 TDD Synchronisation to new cells

For the requirements in section 8 and 9 to apply, an intra-frequency or inter-frequency TDD cell shall be considered detectable when,

$$\left.\left(\frac{P-CCPCH_E_c}{I_o}\right)\right|_{in\ dB} \geq -11dB$$

$$\left.\left(\frac{SCH_E_c}{I_o}\right)\right|_{in\ dB} \geq -13dB$$

where the received P-CCPCH E_c/I_o is defined as

$$\left.\left(\frac{P-CCPCH_E_c}{I_o}\right)\right|_{in\ dB} = \left.\left(\frac{P-CCPCH_E_c}{I_{or}}\right)\right|_{in\ dB} - \left.\frac{I_o}{\left(\hat{I}_{or}\right)}\right|_{in\ dB}$$

and the received SCH E_c/I_o is defined as

$$\left.\left(\frac{SCH_E_c}{I_o}\right)\right|_{in\ dB} = \left.\left(\frac{SCH_E_c}{I_{or}}\right)\right|_{in\ dB} - \left.\frac{I_o}{\left(\hat{I}_{or}\right)}\right|_{in\ dB}$$

and SCH_Ec/Ior is equally divided between primary synchronisation code and the sum of all secondary synchronisation codes, where the secondary synchronisation codes are also equally divided.

8.1B.2.7 E-UTRAN FDD measurements

The requirements in this section apply only to UEs supporting 7.68Mcps TDD and E-UTRAN FDD.

1) For a UE requiring idle intervals to perform E-UTRAN FDD measurements. In CELL_DCH state when signalled by UTRAN and when idle intervals are used, the UE shall continuously measure previously detected E-UTRAN FDD cells and search for new E-UTRAN FDD cells.

2) For a UE not requiring idle intervals to perform E-UTRAN FDD measurements:

- the UE shall measure either all E-UTRAN FDD cells present in the monitored set or, if only frequencies are provided in the neighbour cell list, the strongest cells present in the detected set, up to the monitoring capabilities of the UE.

- the relevant requirements for E-UTRAN FDD dedicated mode when a [TBD] channel is assigned in 3GPP TS 36.133 [24] shall apply. This is further detailed in the following subclauses.

8.1B.2.7.1 Identification of a new cell

When idle intervals are used for E-UTRAN FDD measurements, the UE shall be able to identify a new detectable E-UTRAN FDD cell within

$$T_{\text{Identify E-UTRAN FDD}} = T_{\text{Basic_Identify_E-UTRAN FDD}} \cdot \frac{T_{\text{Measurement_Period_E-UTRAN FDD}}}{T_{\text{E-UTRAN FDD}}} \quad ms$$

;

If the UE does not need idle intervals to perform E-UTRAN FDD measurements, the UE shall be able to identify a new detectable E-UTRAN FDD cell within $T_{\text{Basic_Identify_E-UTRAN FDD}}$ ms.

Where:

$T_{\text{E-UTRAN FDD}}$: This is the minimum time that is available for E-UTRAN FDD measurements during the measurement period $T_{\text{Measurement_Period_E-UTRAN FDD}}$ with an arbitrarily chosen timing. The minimum time per idle interval is calculated by assuming 2*0.5 ms for implementation margin.

$T_{\text{Basic_Identify_E-UTRAN FDD}}$ = 480 ms

When L3 filtering is used an additional delay can be expected.

An E-UTRAN FDD cell shall be considered detectable when

- RSRP related side condition given in Section 9.1 of [24] are fulfilled for a corresponding Band,
- $SCH_RP|_{dBm} \geq$ -127 dBm for Bands 1, 4, 6, 10, defined in [26] and $SCH_E_S/Iot \geq$ -4 dB,
- $SCH_RP|_{dBm} \geq$ -126 dBm for Band 9 defined in [26] and $SCH_E_S/Iot \geq$ -4 dB,
- $SCH_RP|_{dBm} \geq$ -125 dBm for Bands 2, 5, 7 , 11, 17 defined in [26] and $SCH_E_S/Iot \geq$ -4 dB,
- $SCH_RP|_{dBm} \geq$ -124 dBm for Bands 3, 8, 12, 13, 14 defined in [26] and $SCH_E_S/Iot \geq$ -4 dB.

8.1B.2.7.2 E-UTRAN RSRP and RSRQ measurement period

When idle intervals are scheduled for E-UTRAN FDD measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.1.5a and 9.1.1.5b with measurement period of $T_{\text{Measurement_Period_E-UTRAN FDD}} = 480 \times N_{\text{Freq}}$ ms where N_{Freq} is the number of FDD frequencies indicated in the E-UTRAN measurement control information.

The UE shall be capable of performing RSRP measurements of at least 4 E-UTRAN FDD cells per E-UTRAN FDD frequency for up to 3 FDD E-UTRAN frequencies.

8.1B.2.7.3 Periodic reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

8.1B.2.7.4 Void

8.1B.2.7.5 Event Triggered reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH . The delay uncertainty is: [2] x TTI_{DCCH}. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify\ E\text{-}UTRAN\ FDD}$ defined in Section 8.1B.2.7.1. When L3 filtering is used an additional delay can be expected.

If a cell has been detectable at least for the time period $T_{identify\ E\text{-}UTRAN\ FDD}$ and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_E\text{-}UTRAN_FDD}$ provided the timing to that cell has not changed more than [FFS] while idel interval has not been available and the L3 filter has not been used.

8.1B.2.8 E-UTRAN TDD measurements

The requirements in this section apply only to UEs supporting 1.28Mcps TDD and E-UTRAN TDD.

1) For a UE requiring idle intervals to perform E-UTRAN TDD measurements. In CELL_DCH state when signalled by UTRAN and when idle intervals are used, the UE shall continuously measure previously detected E-UTRAN TDD cells and search for new E-UTRAN TDD cells.

2) For a UE not requiring idle intervals to perform E-UTRAN TDD measurements:

 - the UE shall measure either all E-UTRAN TDD cells present in the monitored set or, if only frequencies are provided in the neighbour cell list, the strongest cells present in the detected set, up to the monitoring capabilities of the UE.

 - the relevant requirements for E-UTRAN TDD dedicated mode when a [TBD] channel is assigned in 3GPP TS 36.133 [24] shall apply. This is further detailed in the following subclauses.

8.1B.2.8.1 Identification of a new cell

When idle intervals are used for E-UTRAN measurements, the UE shall be able to identify a new detectable E-UTRAN TDD cell within

$$T_{Identify\ E\text{-}UTRAN\ TDD} = T_{Basic_Identify_E\text{-}UTRAN\ TDD} \cdot \frac{T_{Measurement_Period_E\text{-}UTRAN\ TDD}}{T_{E\text{-}UTRAN\ TDD}} \quad ms$$

;

If the UE does not need idle intervals to perform E-UTRAN TDD measurements, the UE shall be able to identify a new detectable E-UTRAN TDD cell within $T_{Basic_Identify_E\text{-}UTRAN\ TDD}$ ms.

Where:

$T_{E\text{-}UTRAN\ TDD}$: This is the minimum time that is available for E-UTRAN TDD measurements during the measurement period $T_{Measurement_Period_E\text{-}UTRAN\ TDD}$ with an arbitrarily chosen timing. The minimum time per idle interval is calculated by assuming 2*0.5 ms for implementation margin.

$T_{Basic_Identify_E\text{-}UTRAN\ TDD}$ = 480ms

When L3 filtering is used an additional delay can be expected.

An E-UTRAN TDD cell shall be considered detectable when

- RSRP related side condition given in Section 9.1 of [24] are fulfilled for a corresponding Band,
- SCH_RP|$_{dBm}$≥ -127 dBm for Bands 33, 34, 35, 36, 37, 38, 39 and 40 defined in [26] and SCH Ês/Iot ≥ -4 dB,

8.1B.2.8.2 E-UTRAN RSRP and RSRQ measurement period

When idle intervals are scheduled for E-UTRAN TDD measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.1.5a and 9.1.1.5b with measurement period of $T_{Measurement_Period_E\text{-}UTRAN\ TDD} = 480 \times N_{Freq}$ ms where N_{Freq} is the number of TDD frequencies indicated in the E-UTRAN measurement control information.

The UE shall be capable of performing RSRP measurements of at least 4 E-UTRAN TDD cells per E-UTRAN TDD frequency for up to 3 E-UTRAN TDD frequencies.

8.1B.2.8.3 Periodic reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

8.1B.2.8.4 Void

8.1B.2.8.5 Event Triggered reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH . The delay uncertainty is: [2] x TTI_{DCCH}. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{Identify\ E\text{-}UTRAN\ TDD}$ defined in Section 8.1B.2.8.1. When L3 filtering is used an additional delay can be expected.

If a cell has been detectable at least for the time period $T_{Identify\ E\text{-}UTRAN\ TDD}$ and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_E\text{-}UTRAN_TDD}$ provided the timing to that cell has not changed more than [FFS] while idel interval has not been available and the L3 filter has not been used.

8.2 Measurements in CELL_DCH State with special requirements (3.84 Mcps option)

8.2.1 Introduction

This section contains specific requirements for certain measurements beyond those specified in section 8.1. The measurements are defined in [14], the measurement model is defined in [15] and measurement accuracies are specified in section 9. As long as the measurement configuration does not exceed the requirements stated in section 8.2.2, the UE shall meet the performance requirements defined in section 9. Control of measurement reporting is specified in [16]. Idle intervals for the purpose of measurements are described in [14].

8.2.2 Requirements

The UE shall be able to perform in parallel all physical layer measurements according to table 8.2. In this section one physical layer measurement corresponds to a measurement at the reference point B (i.e. measurement reported by layer 1 after layer 1 filtering) in the measurement model in [15].

In addition to the requirements in table 8.2, a UE in CELL_DCH state shall also be able to measure and report the quantities according to section 8.1.

Table 8.2: Parallel physical layer measurement requirements

Measurement quantity	Number of parallel physical layer measurements possible to request from the UE	Note
Transport channel BLER	1 per Transport Channel	
UE transmitted power	1 per UL timeslot	
SFN-SFN observed time difference type 2	1	
UE GPS Timing of Cell Frames for UP	1	Only applicable for UE with this capability

8.2A Parallel Measurements in CELL_DCH State (1.28 Mcps option)

8.2A.1 Introduction

The purpose with this section is to ensure that all UE can handle a certain number of measurements in parallel. The measurements are defined in TS 25.225, the measurement model is defined in TS 25.302 and measurement accuracies are specified in section 9. As long as the measurement configuration does not exceed the requirements stated in section 8.2.2, the UE shall meet the performance requirements defined in section 9. Control of measurement reporting is specified in TS 25.331 and measurements reporting delays are specified in section 8.1A. For the description of the idle intervals see TS 25.225, Annex A.

8.2A.2 Requirements

The UE shall be able to perform in parallel all physical layer measurements according to table 8.2A. In this section one physical layer measurement corresponds to a measurement at the reference point B (i.e. measurement reported by layer 1 after layer 1 filtering) in the measurement model in TS 25.302 [15].

In addition to the requirements in table 8.2A the UE shall in parallel, in state CELL_DCH, also be able to measure and report the quantities according to section 8.1A.

Table 8.2A: Parallel physical layer measurement requirements

Measurement quantity	Number of parallel physical layer measurements possible to request from the UE
Transport channel BLER	1 per TrCh
UE transmitted power	1
SFN-SFN observed time difference type 2	1
UE GPS Timing of Cell Frames for UP	1

8.2B Measurements in CELL_DCH State with special requirements (7.68 Mcps option)

8.2B.1 Introduction

This section contains specific requirements for certain measurements beyond those specified in section 8.1B. The measurements are defined in [14], the measurement model is defined in [15] and measurement accuracies are specified in section 9. As long as the measurement configuration does not exceed the requirements stated in section 8.2B.2, the UE shall meet the performance requirements defined in section 9. Control of measurement reporting is specified in [16]. Idle intervals for the purpose of measurements are described in [14].

8.2B.2 Requirements

The UE shall be able to perform in parallel all physical layer measurements according to table 8.2B. In this section one physical layer measurement corresponds to a measurement at the reference point B (i.e. measurement reported by layer 1 after layer 1 filtering) in the measurement model in [15].

In addition to the requirements in table 8.2B, a UE in CELL_DCH state shall also be able to measure and report the quantities according to section 8.1B.

Table 8.2B: Parallel physical layer measurement requirements

Measurement quantity	Number of parallel physical layer measurements possible to request from the UE	Note
Transport channel BLER	1 per Transport Channel	
UE transmitted power	1 per UL timeslot	
SFN-SFN observed time difference type 2	1	
UE GPS Timing of Cell Frames for UP	1	Only applicable for UE with this capability

8.3 Capabilities for Support of Event Triggering and Reporting Criteria in CELL_DCH state (3.84 Mcps option)

8.3.1 Introduction

This section contains requirements on UE capabilities for support of event triggering and reporting criteria. As long as the measurement configuration does not exceed the requirements stated in section 8.3.2, the UE shall meet the performance requirements defined in section 9.

The UE can be requested to make measurements under different measurement identities. Each Measurement Identity corresponds to either event based reporting, periodic reporting or no reporting. In case of event based reporting each Measurement Identity is associated with one or more events, each identified with an Event Identity. In case of periodic reporting, a Measurement Identity is associated with one periodic reporting criterion. In case of no reporting, a Measurement Identity is associated with one no reporting criterion.

The purpose of this section is to set some limits on the number of different event, periodic and no reporting criteria the UE may be requested to track in parallel.

8.3.2 Requirements

In this section a reporting criterion corresponds to either one event (in the case of event based reporting), or one periodic reporting criterion (in the case of periodic reporting), or one no reporting criterion (in case of no reporting). Fore event based reporting, each instance of event, with the same or different Event Identities, is counted as separate reporting criterion in Table 8.6.

The UE shall be able to support in parallel per category up to E_{cat} reporting criteria according to Table 8.6. The same type of events (e.g. events 1G) are counted as different events if either any of the parameters related to the events or their neighbour cell lists or both differ from each other.

For the measurement categories: Intra-frequency, Inter frequency and Inter-RAT the UE need not support more than 14 reporting criteria in total. For the measurement categories Traffic volume and Quality measurements the UE need not support more than 16 reporting criteria in total.

For the measurement category Intra-frequency the UE shall support at least 2 reporting criteria for event type 1G and at least 4 reporting criteria for an arbitrary combination of event types 1H and 1I.

Table 8.6: Requirements for reporting criteria per measurement category

Measurement category	E_{cat}	Note
Intra-frequency	6	
Inter-frequency	6	
Inter-RAT	4	Only applicable for UE with this capability
UE internal measurements	8	
Traffic volume measurements	2 + (2 per Transport Channel)	
Quality measurements	2 per Transport Channel	
UP measurements	2	Only applicable for UE with this capability.

8.3A Capabilities for Support of Event Triggering and Reporting Criteria in CELL_DCH State (1.28 Mcps option)

8.3A.1 Introduction

This section contains requirements on UE capabilities for support of event triggering and reporting criteria. As long as the measurement configuration does not exceed the requirements stated in section 8.3A.2, the UE shall meet the performance requirements defined in section 9.

The UE can be requested to make measurements under different measurement identities. Each Measurement Identity corresponds to either event based reporting, periodic reporting or no reporting. In case of event based reporting, each Measurement Identity is associated with one or more events, each identified with an Event Identity. In case of periodic reporting, a Measurement Identity is associated with one periodic reporting criterion. In case of no reporting, a Measurement Identity is associated with one no reporting criterion.

The purpose of this section is to set some limits on the number of different event, periodic and no reporting criteria the UE may be requested to track in parallel.

8.3A.2 Requirements

In this section a reporting criterion corresponds to either one event (in the case of event based reporting), or one periodic reporting criterion (in case of periodic reporting), or one no reporting criterion (in case of no reporting). For event based reporting, each instance of event, with the same or different Event Identities, is counted as separate reporting criterion in Table 8.6A.

The UE shall be able to support in parallel per category up to E_{cat} reporting criteria according to Table 8.6A. The same type of events (e.g. events 1G) are counted as different events if either any of the parameters related to the events or their neighbour cell lists differ from each other.

For the measurement categories: Intra-frequency, Inter frequency and Inter-RAT the UE need not support more than 14 reporting criteria in total. For the measurement categories Traffic volume and Quality measurements the UE need not support more than 16 reporting criteria in total.

Table 8.6A: Requirements for reporting criteria per measurement category

Measurement category	E_{cat}	Note
Intra-frequency	4	
Inter-frequency	6	
Inter-RAT GSM	4	Only applicable for UE with this capability
Inter-RAT E-UTRA	[TBD]	Only applicable for UE with this capability
UE internal measurements	8	
Traffic volume measurements	2 + (2 per Transport Channel)	
Quality measurements	2 per Transport Channel	
UP measurements	2	Only applicable for UE with this capability.

8.3B Capabilities for Support of Event Triggering and Reporting Criteria in CELL_DCH state (7.68 Mcps option)

8.3B.1 Introduction

This section contains requirements on UE capabilities for support of event triggering and reporting criteria. As long as the measurement configuration does not exceed the requirements stated in section 8.3B.2, the UE shall meet the performance requirements defined in section 9.

The UE can be requested to make measurements under different measurement identities. Each Measurement Identity corresponds to either event based reporting, periodic reporting or no reporting. In case of event based reporting each Measurement Identity is associated with one or more events, each identified with an Event Identity. In case of periodic reporting, a Measurement Identity is associated with one periodic reporting criterion. In case of no reporting, a Measurement Identity is associated with one no reporting criterion.

The purpose of this section is to set some limits on the number of different event, periodic and no reporting criteria the UE may be requested to track in parallel.

8.3B.2 Requirements

In this section a reporting criterion corresponds to either one event (in the case of event based reporting), or one periodic reporting criterion (in the case of periodic reporting), or one no reporting criterion (in case of no reporting). Fore event based reporting, each instance of event, with the same or different Event Identities, is counted as separate reporting criterion in Table 8.6B.

The UE shall be able to support in parallel per category up to E_{cat} reporting criteria according to Table 8.6B. The same type of events (e.g. events 1G) are counted as different events if either any of the parameters related to the events or their neighbour cell lists or both differ from each other.

For the measurement categories: Intra-frequency, Inter frequency and Inter-RAT the UE need not support more than 14 reporting criteria in total. For the measurement categories Traffic volume and Quality measurements the UE need not support more than 16 reporting criteria in total.

For the measurement category Intra-frequency the UE shall support at least 2 reporting criteria for event type 1G and at least 4 reporting criteria for an arbitrary combination of event types 1H and 1I.

Table 8.6B: Requirements for reporting criteria per measurement category

Measurement category	E_{cat}	Note
Intra-frequency	6	
Inter-frequency	6	
Inter-RAT	4	Only applicable for UE with this capability
UE internal measurements	8	
Traffic volume measurements	2 + (2 per Transport Channel)	
Quality measurements	2 per Transport Channel	
UP measurements	2	Only applicable for UE with this capability.

8.4 Measurements in CELL_FACH State (3.84 Mcps option)

8.4.1 Introduction

This section contains requirements on the UE regarding measurement reporting in CELL_FACH state. The requirements are split in TDD intra frequency, TDD inter frequency, FDD and GSM measurements. These measurements may be used by the UTRAN, e.g. for handover decisions. The measurements are defined in [14], the measurement model is defined in [15] and measurement accuracies are specified in section 9. Control of measurement reporting is specified in [16] and parallel measurements are specified in section 8.2. For the description of the idle intervals see [14].

8.4.2 Requirements

8.4.2.1 UE Measurement Capability

The UE shall be able to monitor up to

- 32 intra frequency TDD cells (including serving cell), and
- 32 inter frequency cells, including
 - TDD mode cells distributed on up to 2 additional TDD carriers and
 - Depending on UE capability, FDD mode cells, distributed on up to 3 FDD carriers.
- Depending on UE capability, 32 inter RAT GSM cells.

The requirements in section 9 on P-CCPCH RSCP measurements are applicable for a UE performing measurements according to this section. For inter-frequency FDD, TDD and GSM cell re-selection, measurement occasions as specified in [16] and idle intervals as described in [14] are used to find and measure on other cells.

It is defined below how the measurements on different systems and modes are performed given the time allocated to that system. The requirements in this section are based on the assumption that the time during the measurement occasions and idle intervals that is allocated to each of the different modes and systems shall be equally shared by the modes which the UE has capability for and that are in the monitored set signalled by the network.

The UE is required to measure periodically once every time period T_{meas} on each of the modes and systems, FDD interfrequency cells, TDD interfrequency cells and GSM carriers, for which the corresponding parameter N_{FDD}, N_{TDD} and N_{GSM} is set to 1, within the measurement time T_{meas}

$$T_{meas} = \left[\left(N_{FDD} + N_{TDD} + N_{GSM}\right) \cdot N_{TTI} \cdot \text{M_REP} \cdot 10\right] \text{ms}$$

where the following parameters are defined:

N_{TDD} = 0 or 1. If there are inter-frequency TDD cells in the neighbour list N_{TDD}=1, otherwise N_{TDD}=0.

N_{FDD} = 0 or 1. If the UE is capable of FDD and there are FDD cells in the neighbour list N_{FDD}=*1* otherwise N_{FDD}=0.

N_{GSM} = 0 or 1. If the UE is capable of GSM and there are GSM cells in the neighbour list, N_{GSM}=*1*, otherwise N_{GSM}=0.

M_REP is the Measurement Occasion cycle length in number of frames as specified in [16].

N_{TTI} is the number of frames in each measurement occasion, equal to the length of the largest TTI on the SCCPCH monitored by the UE. FACHs that only carry MBMS logical channels (MTCH MSCH or MCCH) are excluded from measurement occasion calculation.

For 3.84 Mcps TDD UE capable of MBMS reception and if MBMS reception is active, during Measurement Occasion the UE shall:

- Start to switch back to its serving cell frequency 1 timeslot prior to the start of the MBMS reception
- Switch back to its target inter-frequency within 1 timeslot immediately after the last MBMS reception.

The FACH Measurement Occasion of N_{TTI} frames will be repeated every N_{TTI} * M_REP frame.

Table 8.6B: K values for each N_{TTI} value

N_{TTI}	K
1	3,4,5,6
2	2,3,4,5
4	2,3,4
8	1,2,3

8.4.2.2 TDD intra frequency measurements

During the CELL_FACH state the UE shall continuously measure identified intra frequency TDD cells and search for new intra frequency TDD cells in the monitored set. If a measurement occasion is activated, intra frequency measurements can be performed between the measurement occasions.

In case no measurement occasion is activated, in order for the requirements in the following subsections to apply, the Beacon timeslots of the intra-frequency TDD cells indicated in the measurement control information shall either be synchronised with the Beacon timeslots of the serving cell, such that the UE can measure an intra-frequency cell TDD cell at least once every frame for the slot allocation case in use in this cell. The UE shall be capable of intra frequency measurements during active DL timeslots.

8.4.2.2.1 Identification of a new cell

The UE shall be able to identify a new inter frequency TDD detectable cell belonging to the monitored set within $T_{identify\ intra}$ ms, where $T_{identify\ intra}$ is specified in section 8.1.2.2.1.

In the case that MTCH is being received, the UE shall be able to take identified cells into use for MTCH combining purposes within $T_{identify\ intra}$ ms.

If more candidate cells are identified than the UE has combing capability, then cells ranked in decreasing MTCH reception quality shall be considered for combing purposes.

8.4.2.2.2 UE P-CCPCH RSCP measurement capability

In CELL_FACH state the UE shall be capable of performing P-CCPCH RSCP measurements for $X_{measurement\ intra}$ identified intra-frequency TDD cells of the monitored set with a measurement period for intra-frequency P-CCPCH RSCP measurements $T_{measurement\ period\ intra,}$ where

$X_{measurement\ intra}$ is specified in section 8.1.2.2.2

$T_{measurement\ period\ intra}$ is specified in section 8.1.2.2.2

The UE physical layer shall be capable of reporting these measurements to higher layers with the measurement period $T_{measurement\ period\ intra}$.

If the UE has identified more than $X_{measurement\ intra}$ intra-frequency cells, the UE shall perform measurements of all identified cells but the reporting rate of P-CCPCH RSCP measurements of cells from UE physical layer to higher layers may be decreased. The measurement accuracy for all measured cells shall be as specified in the section 9.

8.4.2.2.3 (void)

8.4.2.2.4 (void)

8.4.2.2.5 Timeslot ISCP measurement capability

In CELL_FACH state the measurement period for intra frequency Timeslot ISCP measurements on arbitrary DL timeslots, including Beacon timeslots is 400 ms. The UE shall be capable of performing Timeslot ISCP measurements on the current serving cell for 10 arbitrary DL timeslots. The UE physical layer shall be capable of reporting Timeslot ISCP measurements to higher layers with the measurement period of 400 ms.

8.4.2.2.6 RACH reporting

Reporting measurements in the measurement reports sent on the RACH shall meet the requirements in section 9.

8.4.2.3 TDD inter frequency measurements

When signalled by UTRAN during CELL_FACH state, the UE shall continuously measure identified inter frequency TDD cells and search for new inter frequency TDD cells indicated in the measurement control information.

In CELL_FACH state, measurements opportunities for TDD inter-frequency measurements are provided by means of measurement occasions and idle intervals.

8.4.2.3.1 Identification of a new cell

When measurement occasions and idle intervals are used for inter-frequency TDD measurements, the UE shall be able to identify a new detectable inter-frequency TDD cell belonging to the monitored set within

$$T_{\text{identify inter}} = Max\left\{5000, Ceil\left\{\frac{T_{\text{basic identify TDD inter}}}{T_{\text{Inter FACH}}}\right\} \cdot T_{\text{meas}} \cdot N_{Freq,TDD}\right\} \text{ms}$$

If the UE does not require measurement occasions and idle intervals to perform TDD inter-frequency measurements, the UE shall be able to identify a new detectable inter-frequency TDD cell belonging to the monitored set within 5000 ms.

8.4.2.3.2 P-CCPCH RSCP measurement period

When measurement occasions and idle intervals are used for inter-frequency TDD measurements, the UE shall be capable of performing P-CCPCH RSCP measurements for $X_{\text{measurement TDD inter}}$ inter-frequency TDD cells per TDD frequency of the monitored set.

The UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in section 9 with measurement period of $T_{\text{measurement inter}}$.

$$T_{\text{measurement inter}} = Max\left\{T_{\text{measurement period TDD inter}}, 2 \cdot T_{\text{meas}}, Ceil\left\{\frac{T_{\text{basic measurement TDD inter}}}{T_{\text{Inter FACH}}}\right\} \cdot T_{\text{meas}} \cdot N_{Freq}\right\}$$

If the UE does not require idle intervals to perform inter-frequency TDD measurements, the measurement period for inter frequency P-CCPCH RSCP measurements shall be 480 ms.

Where,

$X_{\text{measurement TDD inter}}$ is specified in section 8.1.2.4.2.

$T_{\text{measurement_period inter}}$ is specified in section 8.1.2.3.2

T_{Meas} is specified in section 8.4.2.1.

$T_{\text{Inter FACH:}}$ is equal to (N_{TTI}*10 - 2*0.5) ms.

$T_{\text{basic identify TDD inter}}$ = 800 ms.

$T_{\text{basic measurement TDD inter}}$ = 50 ms

$N_{\text{Freq TDD}}$is specified in section 8.1.2.3.2

8.4.2.3.3 (void)

8.4.2.3.4 (void)

8.4.2.4 FDD measurements

The requirements in this section shall apply to UE supporting TDD and FDD.

In the CELL_FACH state when FDD inter frequency measurements are scheduled the UE shall continuously measure detected inter frequency FDD cells and search for new inter frequency cells indicated in the measurement control information.

In CELL_FACH state, measurements opportunities for FDD inter-frequency measurements are provided by means of measurement occasions and idle intervals.

8.4.2.4.1 Identification of a new cell

When measurement occasions and idle intervals are used for inter-frequency FDD measurements, the UE shall be able to identify a new detectable inter frequency FDD cell belonging to the monitored set within

$$T_{identify\ FDD\ inter} = Max\left\{5000, Ceil\left\{\frac{T_{basic\ identify\ FDD\ inter}}{T_{Inter\ FACH}}\right\} \cdot T_{meas} \cdot N_{Freq,FDD}\right\}$$

If the UE does not require measurement occasions and idle intervals to perform FDD inter-frequency measurements, the UE shall be able to identify a new detectable inter-frequency FDD cell belonging to the monitored set within 5000 ms.

An inter-frequency FDD cell shall be considered detectable, when CPICH Ec/Io $\geq$ -20 dB, SCH_Ec/Io $\geq$ -17 dB and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code.

8.4.2.4.2 UE CPICH measurement capability

When measurement occasions and idle intervals are used for FDD inter frequency measurements, the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9 with measurement period given by

$$T_{measurement\ FDD\ inter} = Max\left\{T_{measurement\ period\ FDD\ inter}, 2 \cdot T_{meas}, Ceil\left\{\frac{T_{basic\ measurement\ FDD\ inter}}{T_{Inter\ FACH}}\right\} \cdot T_{meas} \cdot N_{Freq,FDD}\right\} \text{ ms}$$

If the UE does not require measurement occasions and idle intervals to perform inter-frequency FDD measurements, the measurement period for inter frequency CPICH measurements shall be 480 ms.

The UE shall be capable of performing CPICH measurements for $X_{measurement\ FDD\ inter}$ inter-frequency FDD cells per frequency of the monitored set and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{measurement\ FDD\ inter}$.

$X_{basic\ measurement\ FDD\ inter}$ is specified in section 8.1.2.4.2.

$T_{measurement_period\ FDD\ inter}$ is specified in section 8.1.2.4.2

$T_{Inter\ FACH:}$ is specified in section 8.4.2.3.2

$T_{basic\ identify\ FDD\ inter}$ is specified in section 8.1.2.4.2

$T_{basic\ measurement\ FDD\ inter}$ is specified in section 8.1.2.4.2.

$N_{Freq\ FDD}$is specified in section 8.1.2.4.2

8.4.2.4.3 (void)

8.4.2.4.4 (void)

8.4.2.5 GSM measurements

The requirements in this section shall apply to UE supporting TDD and GSM.

In CELL_FACH state, measurements opportunities for GSM measurements are provided by means of measurement occasions and idle intervals.

Measurements on GSM cells can be requested with BSIC verified or BSIC non-verified.

a) In CELL_DCH state, when signaled by UTRAN and when measurement occasions and idle intervals are used for GSM measurements, the UE shall continuously measure GSM cells and search for new GSM cells given in the monitored set.

 - In section 8.4.2.1 the split of measurements between different modes and systems is defined. Every second measurement opportunity scheduled for GSM measurements, as given by 8.4.2.1 shall be allocated for GSM initial BSIC identification.

 - The remaining measurement opportunities scheduled for GSM measurements shall be scheduled as follows. 3 measurement opportunities out of 4 shall be allocated for GSM carrier RSSI measurements and 1 out of 4

shall be allocated for GSM BSIC reconfirmation. The scheduling of measurement opportunities between GSM carrier RSSI measurements and GSM BSIC reconfirmation is up to the UE.

b) In CELL_FACH state, when signaled by UTRAN and when the UE does not need measurement occasions and idle intervals to perform GSM measurements, the UE shall measure all GSM cells present in the monitored set

- the relevant requirements for GSM dedicated mode when a TCH channel is assigned in [21] shall apply. This is further detailed in the following sub-sections.

8.4.2.5.1 GSM carrier RSSI

a) For a UE using measurement occasions and idle intervals to perform GSM measurements

A UE supporting GSM measurements using measurement occasions and idle intervals shall meet the minimum number of GSM carrier RSSI measurements specified in table 8.7.

In CELL_FACH state the measurement period, $T_{measurement\ period\ GSM}$, for the GSM carrier RSSI measurement is 480 ms.

The UE shall meet the measurement accuracy requirements stated for RXLEV in [21], when the given measurement time allows the UE to take at least 3 GSM carrier RSSI samples per GSM carrier in the monitored set during the measurement period.

Table 8.7

Measurement opportunity length (timeslots)	Number of GSM carrier RSSI samples per measurement opportunity.
3	1
4	2
5	3
6	4
7	6
8	7
9	8
10	10
11	11
12	12
13	14
15	16
30	32
60	64
120	128

In case the UE is not able to acquire the required number of samples per GSM carrier during one measurement period, the UE shall measure as many GSM carriers as possible during that measurement period using at least 3 samples per GSM carrier. The GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods. This means that, in this particular case, the L1 reporting period to higher layers of a GSM neighbour can be a multiple of the measurement period.

b) For a UE not using measurement occasions and idle intervals to perform GSM measurements

The samples allocated to each carrier shall as far as possible be uniformly distributed over each measurement period. At least 3 received signal level measurement samples are required per GSM carrier RSSI measurement. The measurement period shall be 480 ms.

In case UTRA RACH procedure prevents the UE from acquiring the required number of samples per GSM carrier during one measurement period, the GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods.

8.4.2.5.2 BSIC verification

a) For a UE using measurement occasions and idle intervals to perform GSM measurements

The procedure for BSIC verification on a GSM cell can be divided into the following two tasks:

1) Initial BSIC identification: Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the relative timing between the TDD and GSM cell. The requirements for Initial BSIC identification can be found in 8.4.2.5.2.1.

2) BSIC re-confirmation: Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed. The requirements for Initial BSIC identification can be found in 8.4.2.5.2.2.

Measurements on a GSM cell can be requested with BSIC verified or BSIC non-verified. If GSM measurements are requested with BSIC verified the UE shall be able to report the GSM cells with BSIC verified for those cells where the verification of BSIC has been successful.

The UE shall consider the BSIC of a GSM cell to be "verified" if it has decoded the SCH of the BCCH carrier and identified the BSIC at least one time (initial BSIC identification) From that time instant, the UE shall attempt to re-confirm the BSIC at least once every 6 times $T_{\text{re-confirm abort}}$ seconds. Otherwise, the UE shall consider the BSIC of the GSM cell to be "non-verified".

The time requirement for initial BSIC identification, $T_{\text{identify abort}}$, and the BSIC re-confirmation interval $T_{\text{re-confirm abort}}$ can be found in the sections below.

The UE shall be able to decode a BSIC for the purpose of initial BSIC identification or BSIC reconfirmation within a measurement opportunity, when the time difference between the middle of the received GSM synchronisation burst at the UE and the middle of the measurement opportunity is within the limits specified in Table 8.7.A.

Table 8.7A

Idle Interval Length (timeslots)	Maximum time difference [μs]
3	± 65
4	± 398
5	± 732
6	± 1065
7	± 1398
8	± 1732
9	± 2065
10	± 2398
11	± 2732
12	± 3065
13	± 3398
15	± 4100
30	± 9100
60	± 19100
120	± 39100

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in [20].

b) For a UE not using measurement occasions and idle intervals to perform GSM measurements

The UE shall attempt to verify the BSIC for at least the 6 strongest GSM carriers at least every 10 seconds, to confirm that it is monitoring the same cell, as far as UTRA RACH procedure does not prevent UE from decoding BSIC.

If a BSIC is decoded and matches the expected value, the UE shall consider it as "verified", otherwise it shall consider it as "non-verified".

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in [20].

8.4.2.5.2.1 Initial BSIC identification

This measurement shall be performed in the measurement opportunities as described in 8.4.2.5.

The UE shall continuously attempt to decode the BSIC of the SCH on the BCCH carrier of the 6 strongest BCCH carriers of the GSM cells indicated in the measurement control information. The UE shall give priority for BSIC

decoding attempts in decreasing signal strength order to BSIC carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value.

When the UE attempts to decode the BSIC of one GSM BCCH carrier with unknown BSIC, the UE shall use all available measurementopportunities allocated for GSM initial BSIC identification according section 8.4.2.5 to attempt to decode the BSIC from that GSM BCCH carrier.

If the BSIC of the GSM BCCH carrier has been successfully decoded the UE shall immediately continue BSIC identification with the next GSM BCCH carrier, in signal strength order, with unknown BSIC. The GSM cell for which the BSIC has been successfully identified shall be moved to the BSIC re-confirmation procedure.

If the UE has not successfully decoded the BSIC of the GSM BCCH carrier within $T_{identify\ abort}$, the UE shall abort the BSIC identification attempts for that GSM BCCH carrier. The UE shall continue to try to perform BSIC identification of the next GSM BCCH carrier in signal strength order. The GSM BCCH carrier for which the BSIC identification failed shall not be re-considered for BSIC identification until BSIC identification attempts have been made for all the rest of the 6 strongest GSM BCCH carriers in the monitored set with unknown BSIC.

$T_{identify\ abort}$ is specified in section 8.1.2.5.

8.4.2.5.2.2 BSIC re-confirmation

The requirements of this section are applicable for BSIC re-confirmation.

The UE shall maintain the timing information of 6 identified GSM cells. Initial timing information is obtained from the initial BSIC identification. The timing information shall be updated every time the BSIC is decoded.

For each measurement opportunity allocated for GSM BSIC reconfirmation as described in 8.4.2.5, the UE shall attempt to decode the BSIC occurring during the measurement opportunity. When the UE has to select one out of several possible GSM cells to reconfirm during the same measurement opportunity, priority shall be given to the least recently decoded BSIC.

If the UE fails to decode the BSIC after two successive attempts, the UE shall abort the BSIC re-confirmation attempts for that GSM cell. The GSM cell shall be treated as a new GSM cell with unidentified BSIC and the GSM cell shall be moved to the initial BSIC identification procedure, see section 8.4.2.5.2.1. The UE shall be able to make BSIC re-confirmation attempts for the 6 strongest GSM cells in the monitored list.

Where $T_{re\text{-}confirm\ abort}$ is specified in section 8.1.2.5.

8.4A Measurements in CELL_FACH State (1.28 Mcps option)

8.4A.1 Introduction

This section contains requirements on the UE regarding measurement reporting in CELL_FACH state. The requirements for cell re-selection are split in TDD intra frequency, TDD inter frequency, FDD and GSM measurements. The measurements are defined in TS 25.225, the measurement model is defined in TS 25.302 and measurement accuracies are specified in section 9. Control of measurement reporting is specified in TS 25.331 and parallel measurements are specified in section 8.2. For the description of the idle intervals see TS 25.225, Annex A.

NOTE: In CELL_FACH state, there are no requirements for measurements of inter-RAT E-UTRAN cells.

8.4A.2 Requirements

8.4A.2.1 UE Measurement Capability

The UE shall be able to monitor up to

- 32 intra frequency TDD cells, and
- 32 inter frequency cells, including
 - TDD cells distributed on up to 3 additional TDD carriers and

- Depending on UE capability, FDD cells, distributed on up to 3 FDD carriers.

- Depending on UE capability, 32 GSM cells distributed on up to 32 GSM carriers.

The requirements in section 9 on P-CCPCH RSCP measurements are applicable for a UE performing measurements according to this section. For inter-frequency FDD, TDD and GSM cell re-selection, measurement occasions as specified in TS 25.331 and, in addition, idle intervals as described in TS 25.225 are used to find and measure on these cells.

It is defined below how the measurements on different systems and modes are performed given the time allocated to that system. The requirements in this section are based on the assumption that the time during the measurement occasions and idle intervals that is allocated to each of the different modes and systems shall be equally shared by the modes which the UE has capability for and that are in the monitored set signalled by the network.

The UE is required to measure periodically once every time period T_{meas} on each of the modes and systems, FDD interfrequency cells, TDD interfrequency cells and GSM carriers, for which the corresponding parameter N_{FDD}, N_{TDD} and N_{GSM} is set to 1, within the measurement time T_{meas}

$$T_{meas} = \left[\left(N_{FDD} + N_{TDD} + N_{GSM}\right) \cdot N_{TTI} \cdot \text{M_REP} \cdot 10\right] \text{ms}$$

where the following parameters are defined:

N_{TDD}	= 0 or 1. If there are inter-frequency TDD cells in the neighbour list N_{TDD}=1, otherwise N_{TDD}=0.
N_{FDD}	= 0 or 1. If the UE is capable of FDD and there are FDD cells in the neighbour list N_{FDD}=1 otherwise N_{FDD}=0.
N_{GSM}	= 0 or 1. If the UE is capable of GSM and there are GSM cells in the neighbour list, N_{GSM}=1, otherwise N_{GSM}=0.
M_REP	is the Measurement Occasion cycle length in number of frames as specified in TS 25.331.
N_{TTI}	is the number of frames in each measurement occasion, equal to the length of the largest TTI on the SCCPCH monitored by the UE. FACHs that only carry MBMS logical channels (MTCH MSCH or MCCH) are excluded from measurement occasion calculation.

The FACH Measurement Occasion of N_{TTI} frames will be repeated every N_{TTI} * M_REP frame.

8.4A.2.2 TDD intra frequency measurements

During the CELL_FACH state the UE shall continuously measure identified intra frequency cells and search for new intra frequency cells in the monitored set. Intra frequency measurements can be performed (simultaneously to data reception from the active cell) in all time slots not used for inter frequency measurements.

8.4A.2.2.1 Identification of a new cell

The UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{\text{identify intra}} = T_{\text{basic identify TDD, intra}} \cdot \frac{N_{\text{Period, Intra}}}{N_{\text{Intra}}} \text{ ms}$$

A cell shall be considered detectable when P-CCPCH Ec/Io $\geq$ -8 dB, DwPCH_Ec/Io $\geq$ -5 dB.

In the case that MTCH is being received, the UE shall be able to take identified cells into use for MTCH combining purposes within $T_{\text{identify intra}}$ ms.

If more candidate cells are identified than the UE has combing capability, then cells ranked in decreasing MTCH reception quality shall be considered for combing purposes.

8.4A.2.2.2 UE P-CCPCH RSCP measurement capability

In the CELL_FACH state the measurement period for intra frequency P-CCPCH RSCP measurements is 200 ms. When all TS0, DwPTS and main guard period in the measurement period are scheduled for intra frequency measurements, the

UE shall be capable of performing P-CCPCH RSCP measurements for 6 identified intra-frequency cells of the monitored set and the UE physical layer shall be capable of reporting these measurements to higher layers with the measurement period of 200 ms. When inter-frequency measurements required by the network have to be performed during periods of TS0, DwPTS and main guard period, the UE shall be capable of performing P-CCPCH RSCP measurements for at least $Y_{measurement\ intra}$ cells , where $Y_{measurement\ intra}$ is defined in the following equation.. The measurement accuracy for all measured cells shall be as specified in the section 9. If the UE has identified more than $Y_{measurement\ intra}$ cells, the UE shall perform measurements of all identified cells but the reporting rate of P-CCPCH RSCP measurements of cells from UE physical layer to higher layers may be decreased.

$$Y_{measurement\ \ intra} = \mathrm{Floor}\left\{ X_{basic\ measurement\ TDD} \cdot \frac{N_{Intra}}{N_{Period,\ Intra}} \right\}$$

whereby function Floor(x) takes the integer part of x.

$X_{basic\ measurement\ TDD}$ is specified in section 8.1A.2.2.2

$T_{Measurement_Period,\ Intra}$ is specified in section 8.1A.2.2.2

$N_{Period,\ Intra}$: is specified in section 8.1A.2.2.2

N_{Intra} : is specified in section 8.1A.2.2.2

$T_{basic_identify_TDD,\ intra}$ is specified in section 8.1A.2.2.2

8.4A.2.2.2A Timeslot ISCP measurement capability

In the CELL_FACH state the measurement period for intra frequency Timeslot ISCP measurements on arbitrary DL timeslots, including Beacon timeslots is 400 ms. When no inter frequency measurement is scheduled, the UE shall be capable of performing Timeslot ISCP measurements on the current serving cell for 5 arbitrary DL timeslots. The UE physical layer shall be capable of reporting Timeslot ISCP measurements to higher layers with the measurement period of 400 ms.

When inter-frequency measurements are required by the network, the UE shall be able to perform Timeslot ISCP measurements on the current serving for at least $Y_{measurement\ intra\ ISCP}$ arbitrary DL timeslots, where $Y_{measurement\ intra\ ISCP}$ is defined in the following equation. Any Timeslot ISCP measurement that could not be performed during that measurement period, shall be measured in the following measurement periods. The measurement accuracy of the Timeslot ISCP measurement shall be as specified in the section 9.

$$Y_{measurement\ \ intra\ \ ISCP} = Floor\left\{ X_{basic\ measurement\ \ ISCP} \cdot \frac{T_{Intra}}{T_{Measurement\ \ Period,\ Intra,\ ISCP}} \right\}$$

whereby function Floor(x) takes the integer part of x,

$X_{basic\ measurement\ ISCP}$ = 5 (arbitrary DL timeslots of the current serving cell)

$T_{Measurement_Period,\ Intra,\ ISCP}$ is specified in section 8.1A.2.2.2A,

T_{Intra} is specified in section 8.1A.2.2.2A.

8.4A.2.2.3 RACH Reporting

Reported measurements in the measurement reports sent on the RACH shall meet the requirements in section 9.

8.4A.2.3 TDD inter frequency measurements

When signalled by the network during CELL_FACH state, the UE shall continuously measure identified inter frequency cells and search for new inter frequency cells indicated in the measurement control information.

8.4A.2.3.1 Identification of a new cell

The UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{identify\ inter} = Max\left\{5000, N_{basic\ identify\ TDD,inter} \cdot \frac{T_{Measurement\ Period,\ Inter}}{N_{Inter\ FACH}} \cdot N_{Freq}\right\} ms$$

If the UE does not require measurement occasions and idle intervals to perform TDD inter-frequency measurements, the UE shall be able to identify a new detectable inter-frequency TDD cell belonging to the monitored set within 5000 ms.

A cell shall be considered detectable when P-CCPCH Ec/Io $\geq$ -8 dB, DwPCH_Ec/Io $\geq$ -5 dB.

8.4A.2.3.2 UE P-CCPCH RSCP measurement capability

When TDD inter frequency measurements are scheduled, the UE physical layer shall be capable of reporting P-CCPCH RSCP measurements to higher layers with measurement accuracy as specified in section 9 with measurement period given by

$$T_{measurement\ inter} = Max\left\{T_{Measurement\ \ Period,\ Inter}, N_{basic\ measurement\ TDD\ inter} \cdot \frac{T_{Measurement\ Period,\ Inter}}{N_{Inter\ FACH}} \cdot N_{Freq}\right\} ms$$

where

$T_{Measurement_Period\ Inter}$ is specified in section 8.1A.2.3.2

$N_{Inter\ FACH}$: This is the minimum number of sub-frame in that the signal of P-CCPCH and DwPCH can be received for inter frequency target cell during the period $T_{measurement_Period\ Inter}$ with an arbitrarily chosen timing. It depends on the channel allocation and on measurement occasions during CELL-FACH state and is calculated by assuming 2*0.1ms for implementation margin (for the description of the idle intervals see Annex A of 25.225 and for definition of measurement occasions during CELL_FACH state given by M_REP and TTI see TS 25.331). During the measurement occasions for CELL_FACH state the UE shall measure primarily cells that can not be measured in the idle intervals.

$T_{basic_identify_TDD,inter}$ is specified in section 8.1A.2.3.2

$N_{basic\ identify\ TDD,\ Inter}$ is specified in section 8.1A.2.3.2

$T_{basic_measurement_TDD\ inter}$ is specified in section 8.1A.2.3.2

$N_{basic\ measurement\ TDD,\ Inter}$ is specified in section 8.1A.2.3.2

N_{Freq} is specified in section 8.1A.2.3.2

If the UE does not need measurement occasions and idle intervals to perform inter-frequency measurements, the measurement period for inter frequency measurements is 480ms.

The UE shall be capable of performing P-CCPCH measurements for $X_{basic\ measurement\ TDD\ inter}$ inter-frequency cells per TDD frequency of the monitored set, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{Measurement_\ Inter.}$

$X_{basic\ measurement\ TDDinter}$ is defined in section 8.1A.2.3.2.

8.4A.2.4 FDD measurements

The requirements in this section shall apply only to UE supporting 1.28Mcps TDD and FDD.

In the CELL_FACH state when FDD inter frequency measurements are scheduled the UE shall continuously measure identified inter frequency FDD cells and search for new inter frequency FDD cells indicated in the measurement control information.

8.4A.2.4.1 Identification of a new cell

The UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{\text{identify FDD inter}} = Max\left\{5000, T_{\text{basic identify FDD inter}} \cdot \frac{T_{\text{Measurement Period FDD inter}}}{T_{\text{Inter FACH}}} \cdot N_{Freq}\right\} ms$$

If the UE does not require measurement occasions and idle intervals to perform FDD inter-frequency measurements, the UE shall be able to identify a new detectable inter-frequency TDD cell belonging to the monitored set within 5000ms.

An inter-frequency FDD cell shall be considered detectable, when CPICH Ec/Io $\geq$ -20 dB, SCH_Ec/Io $\geq$ -17 dB and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code.

8.4A.2.4.2 UE CPICH measurement capability

When FDD inter frequency measurements are scheduled, the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9 with measurement period given by

$$T_{\text{measurement FDD inter}} = Max\left\{T_{\text{Measurement Period FDD inter}}, T_{\text{basic measurement FDD inter}} \cdot \frac{T_{\text{Measurement Period FDD inter}}}{T_{\text{Inter FACH}}} \cdot N_{Freq}\right\} ms$$

$T_{\text{Measurement_Period FDD inter}}$ is specified in section 8.1A.2.4.2

$T_{\text{Inter FACH:}}$ This is the minimum time that is available for the inter frequency measurements during the period $T_{\text{Measurement_Period FDD inter}}$ with an arbitrarily chosen timing. The minimum time depends on the channel allocation and on measurement occasions during CELL_FACH state and is calculated by assuming 2*0.1 ms for implementation margin (for the description of the idle intervals see Annex A of 25.225 and for definition of measurement occasions during CELL_FACH state given by M_REP and TTI see TS 25.331). It is assumed for the requirement that the slot allocation allows measurement windows in the idle periods to be of minimum duration necessary to perform the measurements. During the measurement occasions for CELL_FACH state the UE shall measure primarily cells that can not be measured in the idle intervals.

$T_{\text{basic_identify_FDD,inter}}$ is specified in section 8.1A.2.4.2

$T_{\text{basic_measurement_FDD inter}}$ is specified in section 8.1A.2.4.2.

N_{Freq} is specified in section 8.1A.2.4.2

If the UE does not need measurement occasions and idle intervals to perform inter-frequency measurements, the measurement period for FDD measurements is 480 ms.

The UE shall be capable of performing CPICH measurements for $X_{\text{basic measurement FDD inter}}$ inter-frequency cells per FDD frequency of the monitored set, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{\text{MeasurementFDD Inter.}}$

$X_{\text{basic measurement FDDinter}}$ is defined in section 8.1A.2.4.2

8.4A.2.5 GSM measurements

The requirements in this section shall apply to UE supporting 1.28Mcps TDD and GSM.

To support cell reselection the UE shall always perform BSIC verification in Cell FACH state.

1) For a UE requiring idle intervals or measurement occasions to perform GSM measurements.When signalled by UTRAN during CELL_FACH state, the UE shall continuously measure GSM cells and search for new GSM cells given in the monitored set.

In section 8.4A.2.1 the split of measurements between different modes and systems is defined. Every second measurement window due to idle intervals and measurements occasions scheduled for GSM measurements, as given by 8.4A.2.1 shall be allocated for GSM initial BSIC identification.

The remaining measurement windows due to idle intervals and measurements occasions used for GSM measurements shall be scheduled as follows. 3 window out of 4 shall be allocated for GSM carrier RSSI measurements and 1 out of 4 shall be allocated for GSM BSIC reconfirmation. The scheduling of measurement windows between GSM carrier RSSI measurements and GSM BSIC reconfirmation is up to the UE.

2) For a UE not requiring idle intervals and measurement occasions to perform GSM measurements:

- the UE shall measure all GSM cells present in the monitored set
- the relevant requirements for GSM dedicated mode when a TCH channel is assigned in TS 45.008 shall apply. This is further detailed in the following sub-sections.

8.4A.2.5.1 GSM carrier RSSI

1) For a UE requiring idle intervals or measurement occasions to perform GSM measurements.

An UE supporting GSM measurements shall meet the minimum number of GSM carrier RSSI measurements specified in table 8.8. This measurement shall be based on measurement windows allocated for GSM carrier RSSI measurements as described in 8.4A.2.5. In the CELL_FACH state the measurement period for the GSM carrier RSSI measurement is 480 ms.

The UE shall meet the measurement accuracy requirements stated for RXLEV in TS 45.008, when the given measurement time allows the UE to take at least 3 GSM carrier RSSI samples per GSM carrier in the monitored set during the measurement period.

Table 8.8

Measurement Window Length (slots)	Number of GSM carrier RSSI samples per measurement window
3	1
4	2
5	3
7	6
15	16
30	32
60	64
120	128

In case the UE is not able to acquire the required number of samples per GSM carrier during one measurement period, the UE shall measure as many GSM carriers as possible during that measurement period using at least 3 samples per GSM carrier. The GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods. This means that, in this particular case, the L1 reporting period to higher layers of a GSM neighbour can be a multiple of the measurement period.

2) For a UE not requiring idle intervals and measurement occasions to perform GSM measurements:

The samples allocated to each carrier shall as far as possible be uniformly distributed over each measurement period. At least 3 received signal level measurement samples are required per RSSI value. The measurement period is 480 ms.

In case UTRA RACH procedure prevents the UE from acquiring the required number of samples per GSM carrier during one measurement period, the GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods.

8.4A.2.5.2 BSIC verification

1) For a UE requiring idle intervals or measurement occasions to perform GSM measurements.

The procedure for BSIC verification on a GSM cell can be divided into the following two tasks:

Initial BSIC identification
Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the relative timing between the TDD and GSM cell. The UE shall trigger the initial BSIC identification within 50% of the available measurement windows. The requirements for Initial BSIC identification can be found in 8.4A.2.5.2.1,Initial BSIC identification

BSIC re-confirmation
Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed. The UE shall trigger the

BSIC re-confirmation within the available measurement windows. The requirements for Initial BSIC identification can be found in section 8.4A.2.5.2.2, BSIC re-confirmation.

Measurements on a GSM cell can be requested with BSIC verified or BSIC non-verified. If GSM measurements are requested with BSIC verified the UE shall be able to report the GSM cells with BSIC verified for those cells where the verification of BSIC has been successful.

The BSIC of a GSM cell is considered to be "verified" if the UE has decoded the SCH of the BCCH carrier and identified the BSIC at least one time (initial BSIC identification) and from that moment the BSIC shall be re-confirmed at least once every 6 times $T_{\text{re-confirm abort}}$ seconds. Otherwise the BSIC of the GSM cell is considered as "non-verified". The time requirement for initial BSIC identification, $T_{\text{identify abort}}$, and the BSIC re-confirmation interval $T_{\text{re-confirm abort}}$ can be found in the sections below.

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in TS 45.005.

2) For a UE not requiring idle intervals and measurement occasions to perform GSM measurements:

The UE shall attempt to check the BSIC for at least the 6 strongest GSM carriers at least every 10 seconds, to confirm that it is monitoring the same cell, as far as UTRA RACH procedure does not prevent UE from decoding BSIC.

If a BSIC is decoded and matches the expected value, it is considered as "verified", else it is considered as "non verified".

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in TS 45.005.

8.4A.2.5.2.1 Initial BSIC identification

This measurement is performed in the measurement windows allocated for Initial BSIC identification as described in 8.4A.2.5.

For GSM cells that are requested with BSIC verified the UE shall continuously attempt to decode the SCH on the BCCH carrier of the 6 strongest BCCH carriers of the GSM cells indicated in the measurement control information. The UE shall give priority for BSIC decoding attempts in decreasing signal strength order to BSIC carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value.

When the UE attempts to decode the BSIC of one GSM BCCH carrier with unknown BSIC, the UE shall use all available measurements windows allocated for GSM initial BSIC identification according section 8.4A.2.5 to attempt to decode the BSIC from that GSM BCCH carrier.

If the BSIC of the GSM BCCH carrier has been successfully decoded the UE shall immediately continue BSIC identification with the next GSM BCCH carrier, in signal strength order, with unknown BSIC. The GSM cell for which the BSIC has been successfully identified shall be moved to the BSIC re-confirmation procedure.

If the UE has not successfully decoded the BSIC of the GSM BCCH carrier within $T_{\text{identify abort}}$, the UE shall abort the BSIC identification attempts for that GSM BCCH carrier. The UE shall continue to try to perform BSIC identification of the next GSM BCCH carrier in signal strength order. The GSM BCCH carrier for which the BSIC identification failed shall not be re-considered for BSIC identification until BSIC identification attempts have been made for all the rest of the 6 strongest GSM BCCH carriers in the monitored set with unknown BSIC.

$T_{\text{identify abort}}$ is specified in section 8.1A.2.5.

8.4A.2.5.2.2 BSIC re-confirmation

The requirements of this section are applicable for BSIC re-confirmation.

The UE shall maintain the timing information of 6 identified GSM cells. Initial timing information is obtained from the initial BSIC identification. The timing information shall be updated every time the BSIC is decoded.

For each measurement window allocated for GSM BSIC reconfirmation as described in 8.4A.2.5, the UE shall attempt to decode the BSIC falling within the effective measurement window duration. If more than one BSIC can be decoded within the same measurement window, priority shall be given to the least recently decoded BSIC.

If the UE fails to decode the BSIC after two successive attempts, the UE shall abort the BSIC re-confirmation attempts for that GSM cell. The GSM cell shall be treated as a new GSM cell with unidentified BSIC and the GSM cell shall be moved to the initial BSIC identification procedure, see section 8.4A.2.5.2.1. The UE shall be able to make BSIC re-confirmation attempts for the 6 strongest GSM cells in the monitored list.

$T_{\text{re-confirm abort}}$ is specified in section 8.1A.2.5.

It is assumed for the requirement that the measurement windows possible due to higher layer parameters are of minimum duration necessary to perform the measurements.

8.4B Measurements in CELL_FACH State (7.68 Mcps option)

8.4B.1 Introduction

This section contains requirements on the UE regarding measurement reporting in CELL_FACH state. The requirements are split in TDD intra frequency, TDD inter frequency, FDD and GSM measurements. These measurements may be used by the UTRAN, e.g. for handover decisions. The measurements are defined in [14], the measurement model is defined in [15] and measurement accuracies are specified in section 9. Control of measurement reporting is specified in [16] and parallel measurements are specified in section 8.2B. For the description of the idle intervals see [14].

8.4B.2 Requirements

8.4B.2.1 UE Measurement Capability

The UE shall be able to monitor up to

- 32 intra frequency TDD cells (including serving cell), and
- 32 inter frequency cells, including
 - TDD mode cells distributed on up to 2 additional TDD carriers and
 - Depending on UE capability, FDD mode cells, distributed on up to 3 FDD carriers.
- Depending on UE capability, 32 inter RAT GSM cells.

The requirements in section 9 on P-CCPCH RSCP measurements are applicable for a UE performing measurements according to this section. For inter-frequency FDD, TDD and GSM cell re-selection, measurement occasions as specified in [16] and idle intervals as described in [14] are used to find and measure on other cells.

It is defined below how the measurements on different systems and modes are performed given the time allocated to that system. The requirements in this section are based on the assumption that the time during the measurement occasions and idle intervals that is allocated to each of the different modes and systems shall be equally shared by the modes which the UE has capability for and that are in the monitored set signalled by the network.

The UE is required to measure periodically once every time period T_{meas} on each of the modes and systems, FDD interfrequency cells, TDD interfrequency cells and GSM carriers, for which the corresponding parameter N_{FDD}, N_{TDD} and N_{GSM} is set to 1, within the measurement time T_{meas}

$$T_{meas} = \left[\left(N_{FDD} + N_{TDD} + N_{GSM}\right) \cdot N_{TTI} \cdot \text{M_REP} \cdot 10\right] \text{ms}$$

where the following parameters are defined:

N_{TDD} = 0 or 1. If there are inter-frequency TDD cells in the neighbour list N_{TDD}=1, otherwise N_{TDD}=0.

N_{FDD} = 0 or 1. If the UE is capable of FDD and there are FDD cells in the neighbour list N_{FDD}=*1* otherwise N_{FDD}=0.

N_{GSM} = 0 or 1. If the UE is capable of GSM and there are GSM cells in the neighbour list, N_{GSM}=*1*, otherwise N_{GSM}=0.

M_REP is the Measurement Occasion cycle length in number of frames as specified in [16].

N_{TTI} is the number of frames in each measurement occasion, equal to the length of the largest TTI on the SCCPCH monitored by the UE.

For 7.68 Mcps TDD UE capable of MBMS reception and if MBMS reception is active, during Measurement Occasion the UE shall:

- Start to switch back to its serving cell frequency 1 timeslot prior to the start of the MBMS reception
- Switch back to its target inter-frequency within 1 timeslot immediately after the last MBMS reception.

The FACH Measurement Occasion of N_{TTI} frames will be repeated every N_{TTI} * M_REP frame.

Table 8.8A: K values for each N_{TTI} value

N_{TTI}	K
1	3,4,5,6
2	2,3,4,5
4	2,3,4
8	1,2,3

8.4B.2.2 TDD intra frequency measurements

During the CELL_FACH state the UE shall continuously measure identified intra frequency TDD cells and search for new intra frequency TDD cells in the monitored set. If a measurement occasion is activated, intra frequency measurements can be performed between the measurement occasions.

In case no measurement occasion is activated, in order for the requirements in the following subsections to apply, the Beacon timeslots of the intra-frequency TDD cells indicated in the measurement control information shall either be synchronised with the Beacon timeslots of the serving cell, such that the UE can measure an intra-frequency cell TDD cell at least once every frame for the slot allocation case in use in this cell. The UE shall be capable of intra frequency measurements during active DL timeslots.

8.4B.2.2.1 Identification of a new cell

The UE shall be able to identify a new inter frequency TDD detectable cell belonging to the monitored set within $T_{identify\ intra}$ ms, where $T_{identify\ intra}$ is specified in section 8.1B.2.2.1.

8.4B.2.2.2 UE P-CCPCH RSCP measurement capability

In CELL_FACH state the UE shall be capable of performing P-CCPCH RSCP measurements for $X_{measurement\ intra}$ identified intra-frequency TDD cells of the monitored set with a measurement period for intra-frequency P-CCPCH RSCP measurements $T_{measurement\ period\ intra,}$ where

$X_{measurement\ intra}$ is specified in section 8.1B.2.2.2

$T_{measurement\ period\ intra}$ is specified in section 8.1B.2.2.2

The UE physical layer shall be capable of reporting these measurements to higher layers with the measurement period $T_{measurement\ period\ intra}$.

If the UE has identified more than $X_{measurement\ intra}$ intra-frequency cells, the UE shall perform measurements of all identified cells but the reporting rate of P-CCPCH RSCP measurements of cells from UE physical layer to higher layers may be decreased. The measurement accuracy for all measured cells shall be as specified in the section 9.

8.4B.2.2.3 Timeslot ISCP measurement capability

In CELL_FACH state the measurement period for intra frequency Timeslot ISCP measurements on arbitrary DL timeslots, including Beacon timeslots is 400 ms. The UE shall be capable of performing Timeslot ISCP measurements on the current serving cell for 10 arbitrary DL timeslots. The UE physical layer shall be capable of reporting Timeslot ISCP measurements to higher layers with the measurement period of 400 ms.

8.4B.2.2.4 RACH reporting

Reporting measurements in the measurement reports sent on the RACH shall meet the requirements in section 9.

8.4B.2.3 TDD inter frequency measurements

When signalled by UTRAN during CELL_FACH state, the UE shall continuously measure identified inter frequency TDD cells and search for new inter frequency TDD cells indicated in the measurement control information.

In CELL_FACH state, measurements opportunities for TDD inter-frequency measurements are provided by means of measurement occasions and idle intervals.

8.4B.2.3.1 Identification of a new cell

When measurement occasions and idle intervals are used for inter-frequency TDD measurements, the UE shall be able to identify a new detectable inter-frequency TDD cell belonging to the monitored set within

$$T_{identify\ inter} = Max\left\{5000, Ceil\left\{\frac{T_{basic\ identify\ TDD\ inter}}{T_{Inter\ FACH}}\right\} \cdot T_{meas} \cdot N_{Freq,TDD}\right\} \text{ms}$$

If the UE does not require measurement occasions and idle intervals to perform TDD inter-frequency measurements, the UE shall be able to identify a new detectable inter-frequency TDD cell belonging to the monitored set within 5000 ms.

8.4B.2.3.2 P-CCPCH RSCP measurement period

When measurement occasions and idle intervals are used for inter-frequency TDD measurements, the UE shall be capable of performing P-CCPCH RSCP measurements for $X_{measurement\ TDD\ inter}$ inter-frequency TDD cells per TDD frequency of the monitored set.

The UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in section 9 with measurement period of $T_{measurement\ inter}$.

$$T_{measurement\ inter} = Max\left\{T_{measurement\ period\ TDD\ inter}, 2 \cdot T_{meas}, Ceil\left\{\frac{T_{basic\ measurement\ TDD\ inter}}{T_{Inter\ FACH}}\right\} \cdot T_{meas} \cdot N_{Freq}\right\}$$

If the UE does not require idle intervals to perform inter-frequency TDD measurements, the measurement period for inter frequency P-CCPCH RSCP measurements shall be 480 ms.

Where,

$X_{measurement\ TDD\ inter}$ is specified in section 8.1B.2.4.2.

$T_{measurement_period\ inter}$ is specified in section 8.1B.2.3.2

T_{Meas} is specified in section 8.4B.2.1.

$T_{Inter\ FACH:}$ is equal to (N_{TTI}*10 - 2*0.5) ms.

$T_{basic\ identify\ TDD\ inter}$ = 800 ms.

$T_{basic\ measurement\ TDD\ inter}$ = 50 ms

$N_{Freq\ TDD}$is specified in section 8.1B.2.3.2

8.4B.2.4 FDD measurements

The requirements in this section shall apply to UE supporting TDD and FDD.

In the CELL_FACH state when FDD inter frequency measurements are scheduled the UE shall continuously measure detected inter frequency FDD cells and search for new inter frequency cells indicated in the measurement control information.

In CELL_FACH state, measurements opportunities for FDD inter-frequency measurements are provided by means of measurement occasions and idle intervals.

8.4B.2.4.1 Identification of a new cell

When measurement occasions and idle intervals are used for inter-frequency FDD measurements, the UE shall be able to identify a new detectable inter frequency FDD cell belonging to the monitored set within

$$T_{\text{identify FDD inter}} = Max\left\{5000, Ceil\left\{\frac{T_{\text{basic identify FDD inter}}}{T_{\text{Inter FACH}}}\right\} \cdot T_{\text{meas}} \cdot N_{Freq,FDD}\right\}$$

If the UE does not require measurement occasions and idle intervals to perform FDD inter-frequency measurements, the UE shall be able to identify a new detectable inter-frequency FDD cell belonging to the monitored set within 5000 ms.

An inter-frequency FDD cell shall be considered detectable, when CPICH Ec/Io $\geq$ -20 dB, SCH_Ec/Io $\geq$ -17 dB and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code.

8.4B.2.4.2 UE CPICH measurement capability

When measurement occasions and idle intervals are used for FDD inter frequency measurements, the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9 with measurement period given by

$$T_{\text{measurement FDD inter}} = Max\left\{T_{\text{measurement period FDD inter}}, 2 \cdot T_{\text{meas}}, Ceil\left\{\frac{T_{\text{basic measurement FDD inter}}}{T_{\text{Inter FACH}}}\right\} \cdot T_{\text{meas}} \cdot N_{Freq,FDD}\right\} \text{ ms}$$

If the UE does not require measurement occasions and idle intervals to perform inter-frequency FDD measurements, the measurement period for inter frequency CPICH measurements shall be 480 ms.

The UE shall be capable of performing CPICH measurements for $X_{\text{measurement FDD inter}}$ inter-frequency FDD cells per frequency of the monitored set and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{\text{measurement FDD inter}}$.

$X_{\text{basic measurement FDD inter}}$ is specified in section 8.1B.2.4.2.

$T_{\text{measurement_period FDD inter}}$ is specified in section 8.1B.2.4.2

$T_{\text{Inter FACH:}}$ is specified in section 8.4B.2.3.2

$T_{\text{basic identify FDD inter}}$ is specified in section 8.1B.2.4.2

$T_{\text{basic measurement FDD inter}}$ is specified in section 8.1B.2.4.2.

$N_{\text{Freq FDD}}$is specified in section 8.1B.2.4.2

8.4B.2.5 GSM measurements

The requirements in this section shall apply to UE supporting TDD and GSM.

In CELL_FACH state, measurements opportunities for GSM measurements are provided by means of measurement occasions and idle intervals.

Measurements on GSM cells can be requested with BSIC verified or BSIC non-verified.

a) In CELL_DCH state, when signaled by UTRAN and when measurement occasions and idle intervals are used for GSM measurements, the UE shall continuously measure GSM cells and search for new GSM cells given in the monitored set.

 - In section 8.4B.2.1 the split of measurements between different modes and systems is defined. Every second measurement opportunity scheduled for GSM measurements, as given by 8.4B.2.1 shall be allocated for GSM initial BSIC identification.

- The remaining measurement opportunities scheduled for GSM measurements shall be scheduled as follows. 3 measurement opportunities out of 4 shall be allocated for GSM carrier RSSI measurements and 1 out of 4 shall be allocated for GSM BSIC reconfirmation. The scheduling of measurement opportunities between GSM carrier RSSI measurements and GSM BSIC reconfirmation is up to the UE.

b) In CELL_FACH state, when signaled by UTRAN and when the UE does not need measurement occasions and idle intervals to perform GSM measurements, the UE shall measure all GSM cells present in the monitored set

- the relevant requirements for GSM dedicated mode when a TCH channel is assigned in [21] shall apply. This is further detailed in the following sub-sections.

8.4B.2.5.1 GSM carrier RSSI

a) For a UE using measurement occasions and idle intervals to perform GSM measurements

A UE supporting GSM measurements using measurement occasions and idle intervals shall meet the minimum number of GSM carrier RSSI measurements specified in table 8.8B.

In CELL_FACH state the measurement period, $T_{measurement\ period\ GSM}$, for the GSM carrier RSSI measurement is 480 ms.

The UE shall meet the measurement accuracy requirements stated for RXLEV in [21], when the given measurement time allows the UE to take at least 3 GSM carrier RSSI samples per GSM carrier in the monitored set during the measurement period.

Table 8.8B

Measurement opportunity length (timeslots)	Number of GSM carrier RSSI samples per measurement opportunity.
3	1
4	2
5	3
6	4
7	6
8	7
9	8
10	10
11	11
12	12
13	14
15	16
30	32
60	64
120	128

In case the UE is not able to acquire the required number of samples per GSM carrier during one measurement period, the UE shall measure as many GSM carriers as possible during that measurement period using at least 3 samples per GSM carrier. The GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods. This means that, in this particular case, the L1 reporting period to higher layers of a GSM neighbour can be a multiple of the measurement period.

b) For a UE not using measurement occasions and idle intervals to perform GSM measurements

The samples allocated to each carrier shall as far as possible be uniformly distributed over each measurement period. At least 3 received signal level measurement samples are required per GSM carrier RSSI measurement. The measurement period shall be 480 ms.

In case UTRA RACH procedure prevents the UE from acquiring the required number of samples per GSM carrier during one measurement period, the GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods.

8.4B.2.5.2 BSIC verification

a) For a UE using measurement occasions and idle intervals to perform GSM measurements

The procedure for BSIC verification on a GSM cell can be divided into the following two tasks:

1) Initial BSIC identification: Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the relative timing between the TDD and GSM cell. The requirements for Initial BSIC identification can be found in 8.4B.2.5.2.1.

2) BSIC re-confirmation: Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed. The requirements for Initial BSIC identification can be found in 8.4B.2.5.2.2.

Measurements on a GSM cell can be requested with BSIC verified or BSIC non-verified. If GSM measurements are requested with BSIC verified the UE shall be able to report the GSM cells with BSIC verified for those cells where the verification of BSIC has been successful.

The UE shall consider the BSIC of a GSM cell to be "verified" if it has decoded the SCH of the BCCH carrier and identified the BSIC at least one time (initial BSIC identification) From that time instant, the UE shall attempt to re-confirm the BSIC at least once every 6 times $T_{\text{re-confirm abort}}$ seconds. Otherwise, the UE shall consider the BSIC of the GSM cell to be "non-verified".

The time requirement for initial BSIC identification, $T_{\text{identify abort}}$, and the BSIC re-confirmation interval $T_{\text{re-confirm abort}}$ can be found in the sections below.

The UE shall be able to decode a BSIC for the purpose of initial BSIC identification or BSIC reconfirmation within a measurement opportunity, when the time difference between the middle of the received GSM synchronisation burst at the UE and the middle of the measurement opportunity is within the limits specified in Table 8.8.C.

Table 8.8C

Idle Interval Length (timeslots)	Maximum time difference [μs]
3	± 65
4	± 398
5	± 732
6	± 1065
7	± 1398
8	± 1732
9	± 2065
10	± 2398
11	± 2732
12	± 3065
13	± 3398
15	± 4100
30	± 9100
60	± 19100
120	± 39100

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in [20].

b) For a UE not using measurement occasions and idle intervals to perform GSM measurements

The UE shall attempt to verify the BSIC for at least the 6 strongest GSM carriers at least every 10 seconds, to confirm that it is monitoring the same cell, as far as UTRA RACH procedure does not prevent UE from decoding BSIC.

If a BSIC is decoded and matches the expected value, the UE shall consider it as "verified", otherwise it shall consider it as "non-verified".

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in [20].

8.4B.2.5.2.1 Initial BSIC identification

This measurement shall be performed in the measurement opportunities as described in 8.4B.2.5.

The UE shall continuously attempt to decode the BSIC of the SCH on the BCCH carrier of the 6 strongest BCCH carriers of the GSM cells indicated in the measurement control information. The UE shall give priority for BSIC decoding attempts in decreasing signal strength order to BSIC carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value.

When the UE attempts to decode the BSIC of one GSM BCCH carrier with unknown BSIC, the UE shall use all available measurement opportunities allocated for GSM initial BSIC identification according section 8.4B.2.5 to attempt to decode the BSIC from that GSM BCCH carrier.

If the BSIC of the GSM BCCH carrier has been successfully decoded the UE shall immediately continue BSIC identification with the next GSM BCCH carrier, in signal strength order, with unknown BSIC. The GSM cell for which the BSIC has been successfully identified shall be moved to the BSIC re-confirmation procedure.

If the UE has not successfully decoded the BSIC of the GSM BCCH carrier within $T_{identify\ abort}$, the UE shall abort the BSIC identification attempts for that GSM BCCH carrier. The UE shall continue to try to perform BSIC identification of the next GSM BCCH carrier in signal strength order. The GSM BCCH carrier for which the BSIC identification failed shall not be re-considered for BSIC identification until BSIC identification attempts have been made for all the rest of the 6 strongest GSM BCCH carriers in the monitored set with unknown BSIC.

$T_{identify\ abort}$ is specified in section 8.1B.2.5.

8.4B.2.5.2.2 BSIC re-confirmation

The requirements of this section are applicable for BSIC re-confirmation.

The UE shall maintain the timing information of 6 identified GSM cells. Initial timing information is obtained from the initial BSIC identification. The timing information shall be updated every time the BSIC is decoded.

For each measurement opportunity allocated for GSM BSIC reconfirmation as described in 8.4B.2.5, the UE shall attempt to decode the BSIC occurring during the measurement opportunity. When the UE has to select one out of several possible GSM cells to reconfirm during the same measurement opportunity, priority shall be given to the least recently decoded BSIC.

If the UE fails to decode the BSIC after two successive attempts, the UE shall abort the BSIC re-confirmation attempts for that GSM cell. The GSM cell shall be treated as a new GSM cell with unidentified BSIC and the GSM cell shall be moved to the initial BSIC identification procedure, see section 8.4B.2.5.2.1. The UE shall be able to make BSIC re-confirmation attempts for the 6 strongest GSM cells in the monitored list.

Where $T_{re\text{-}confirm\ abort}$ is specified in section 8.1B.2.5.

8.5 Capabilities for Support of Event Triggering and Reporting Criteria in CELL_FACH state (3.84 Mcps TDD option)

8.5.1 Introduction

This section contains requirements on UE capabilities for support of event triggering and reporting criteria.

8.5.2 Requirements

In this section reporting criteria can be either event triggered reporting criteria or periodic reporting criteria.

Table 8.9A: Requirements for reporting criteria per measurement category

Measurement category	E_{cat}	Note
Traffic volume measurements	2 + (2 per Transport Channel)	

8.5A Capabilities for Support of Event Triggering and Reporting Criteria in CELL_FACH state (1.28 Mcps option)

8.5A.1 Introduction

This section contains requirements on UE capabilities for support of event triggering and reporting criteria.

8.5A.2 Requirements

In this section reporting criteria can be either event triggered reporting criteria or periodic reporting criteria.

Table 8.9: Requirements for reporting criteria per measurement category

Measurement category	E_{cat}	Note
Traffic volume measurements	2	

8.5B Capabilities for Support of Event Triggering and Reporting Criteria in CELL_FACH state (7.68 Mcps TDD option)

8.5B.1 Introduction

This section contains requirements on UE capabilities for support of event triggering and reporting criteria.

8.5B.2 Requirements

In this section reporting criteria can be either event triggered reporting criteria or periodic reporting criteria.

Table 8.9B: Requirements for reporting criteria per measurement category

Measurement category	E_{cat}	Note
Traffic volume measurements	2 + (2 per Transport Channel)	

9 Measurements performance requirements

One of the key services provided by the physical layer is the measurement of various quantities which are used to trigger or perform a multitude of functions. Both the UE and the UTRAN are required to perform a variety of measurements. The complete list of measurements is specified in 3GPP TS 25.302 "Services Provided by Physical Layer". The physical layer measurements for TDD are described and defined in 3GPP TS 25.225 "Physical layer - Measurements (TDD)". In this clause for TDD, per each measurement the relevant requirements on performance in terms of accuracy are reported.

The accuracy requirements in this clause are applicable for AWGN radio propagation conditions.

Unless explicitly stated,

- Reported measurements shall be within defined range in 90 % of the cases.
- Measurement channel is 12,2 kbps as defined in 3GPP TS 25.102 annex A. This measurement channel is used both in active cell and cells to be measured.
- Physical channels used as defined in 3GPP TS 25.102 annex A.
- All requirements are defined when UE is in a CELL_DCH or CELL_FACH stage. The difference between modes are the reporting delay. Some of the measurements are not requested to be reported in both stages.

- Single task reporting.
- Power control is active.

9.1 Measurements performance for UE

The requirements in this clause are applicable for a UE:

- in state CELL_DCH and state CELL_FACH.
- performing measurements according to section 8.
- that is synchronised to the cell that is measured.

The reported measurement result after layer 1 filtering shall be an estimate of the average value of the measured quantity over the measurement period. The reference point for the measurement result after layer 1 filtering is referred to as point B in the measurement model described in TS25.302.

The accuracy requirements in this clause are valid for the reported measurement result after layer 1 filtering. The accuracy requirements are verified from the measurement report at point D in the measurement model having the layer 3 filtering disabled.

9.1.1 Performance for UE measurements in downlink (RX)

9.1.1.1 P-CCPCH RSCP (TDD)

These measurements consider *P-CCPCH RSCP* measurements for TDD cells.

The measurement period for CELL_DCH and CELL_FACH state state can be found in section 8.

9.1.1.1.1 Absolute accuracy requirements

9.1.1.1.1.1 3.84 Mcps TDD option

The accuracy requirements in table 9.1 are valid under the following conditions:

P-CCPCH RSCP ≥ -102 dBm.

The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1.2.6

Table 9.1: P-CCPCH_RSCP absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm/3.84 MHz]
P-CCPCH_RSCP	dBm	± 6	± 9	-94...-70
	dBm	± 8	± 11	-70...-50

9.1.1.1.1.2 1.28 Mcps TDD option

The accuracy requirements in table 9.1A are valid under the following conditions:

P-CCPCH RSCP ≥ -102 dBm

P-CCPCH Ec/Io ≥ -8 dB

DwPCH_Ec/Io ≥ -5 dB

Table 9.1A: P-CCPCH_RSCP absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm/ 1.28 MHz]
P-CCPCH_RSCP	dBm	± 6	± 9	-94...-70
	dBm	± 8	± 11	-70...-50

9.1.1.1.3 7.68 Mcps TDD option

The accuracy requirements in table 9.1B are valid under the following conditions:

P-CCPCH RSCP ≥ -102 dBm.

The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1B.2.6

Table 9.1B: P-CCPCH_RSCP absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm/7.68 MHz]
P-CCPCH_RSCP	dBm	± 6	± 9	-94...-70
	dBm	± 8	± 11	-70...-50

9.1.1.1.2 Relative accuracy requirements

9.1.1.1.2.1 3.84 Mcps TDD option

The P-CCPCH_RSCP intra-frequency relative accuracy is defined as the P-CCPCH_RSCP measured from one cell compared to the P-CCPCH_RSCP measured from another cell on the same frequency.

The accuracy requirements in table 9.2 are valid under the following conditions:

P-CCPCH RSCP1,2 ≥ -102 dBm.

$$\left| \text{P - CCPCH RSCP1}\big|_{in\ dBm} - \text{P - CCPCH RSCP2}\big|_{in\ dBm} \right| \le 20dB$$

Relative Io difference [dB] ≤ relative RSCP difference [dB]

The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1.2.6

It is assumed that the measurements of P-CCPCH RSCP1 and P-CCPCH RSCP2 can be performed within 20ms due to slot allocations in the cells concerned.

Table 9.2: P-CCPCH_RSCP intra-frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions	
		Normal condition	Extreme condition	Io [dBm/ 3.84MHz]	relative RSCP difference [dB]
P-CCPCH_RSCP	dBm	±1	±1	-94...-50	<2
		±2	±2		2...14
		±3	± 3		>14

The P-CCPCH_RSCP inter-frequency relative accuracy is defined as the P-CCPCH_RSCP measured from one cell compared to the P-CCPCH_RSCP measured from another cell on a different frequency.

The accuracy requirements in table 9.3 are valid under the following conditions:

P-CCPCH RSCP1,2 ≥ -102 dBm.

$$\left| \text{P - CCPCH RSCP1} \right|_{in\ dBm} - \text{P - CCPCH RSCP2} \left|_{in\ dBm} \right| \leq 20dB$$

The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1.2.6

Table 9.3: P-CCPCH_RSCP inter-frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm/3.84 MHz]
P-CCPCH_RSCP	dBm	± 6	± 6	-94...-50

9.1.1.1.2.2 1.28 Mcps TDD option

The P-CCPCH_RSCP intra-frequency relative accuracy is defined as the P-CCPCH_RSCP measured from one cell compared to the P-CCPCH_RSCP measured from another cell on the same frequency.

The accuracy requirements in table 9.3A are valid under the following conditions:

P-CCPCH RSCP1,2 ≥ -102 dBm.

$$\left| \text{P - CCPCH RSCP1} \right|_{in\ dBm} - \text{P - CCPCH RSCP 2} \left|_{in\ dBm} \right| \leq 8dB$$

P-CCPCH Ec/Io $\underline{\geq}$ -8 dB

DwPCH_Ec/Io $\underline{\geq}$ -5 dB

It is assumed that the measurements of P-CCPCH RSCP1 and P-CCPCH RSCP2 can be performed within 20ms.

Table 9.3A: P-CCPCH_RSCP intra-frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm /1.28 MHz]
P-CCPCH_RSCP	dBm	±3	±3	-94...-50

The P-CCPCH_RSCP inter-frequency relative accuracy is defined as the P-CCPCH_RSCP measured from one cell compared to the P-CCPCH_RSCP measured from another cell on a different frequency.

The accuracy requirements in table 9.3B are valid under the following conditions:

P-CCPCH RSCP1,2 ≥ -102 dBm.

$$\left| \text{P - CCPCH RSCP1} \right|_{in\ dBm} - \text{P - CCPCH RSCP2} \left|_{in\ dBm} \right| \leq 20dB$$

P-CCPCH Ec/Io $\underline{\geq}$ -8 dB

DwPCH_Ec/Io $\underline{\geq}$ -5 dB

Table 9.3B: P-CCPCH_RSCP inter-frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm/1.28 MHz]
P-CCPCH_RSCP	dBm	± 6	± 6	-94...-50

9.1.1.1.2.3 7.68 Mcps TDD option

The P-CCPCH_RSCP intra-frequency relative accuracy is defined as the P-CCPCH_RSCP measured from one cell compared to the P-CCPCH_RSCP measured from another cell on the same frequency.

The accuracy requirements in table 9.3C are valid under the following conditions:

P-CCPCH RSCP1,2 ≥ -102 dBm.

$$\left|\text{P - CCPCH RSCP1}\right|_{in\ dBm} - \text{P - CCPCH RSCP2}\left|_{in\ dBm}\right| \leq 20dB$$

Relative Io difference [dB] ≤ relative RSCP difference [dB]

The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1B.2.6

It is assumed that the measurements of P-CCPCH RSCP1 and P-CCPCH RSCP2 can be performed within 20ms due to slot allocations in the cells concerned.

Table 9.3C: P-CCPCH_RSCP intra-frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions	
		Normal condition	Extreme condition	Io [dBm/ 7.68MHz]	relative RSCP difference [dB]
P-CCPCH_RSCP	dBm	±1	±1	-94...-50	<2
		±2	±2		2...14
		±3	± 3		>14

The P-CCPCH_RSCP inter-frequency relative accuracy is defined as the P-CCPCH_RSCP measured from one cell compared to the P-CCPCH_RSCP measured from another cell on a different frequency.

The accuracy requirements in table 9.3D are valid under the following conditions:

P-CCPCH RSCP1,2 ≥ -102 dBm.

$$\left|\text{P - CCPCH RSCP1}\right|_{in\ dBm} - \text{P - CCPCH RSCP2}\left|_{in\ dBm}\right| \leq 20dB$$

The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1B.2.6

Table 9.3D: P-CCPCH_RSCP inter-frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm/7.68 MHz]
P-CCPCH_RSCP	dBm	± 6	± 6	-94...-50

9.1.1.1.3 Range/mapping

The reporting range for *P-CCPCH RSCP* is from -120 ...-25 dBm.

In table 9.4 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.4

Reported value	Measured quantity value	Unit
P-CCPCH RSCP_LEV _-05	P-CCPCH RSCP <-120	dBm
P-CCPCH RSCP_LEV _-04	-120 ≤ P-CCPCH RSCP < -119	dBm
P-CCPCH RSCP_LEV _-03	-119 ≤ P-CCPCH RSCP < -118	dBm
…	…	…
P-CCPCH RSCP_LEV _89	-27 ≤ P-CCPCH RSCP < -26	dBm
P-CCPCH RSCP_LEV _90	-26 ≤ P-CCPCH RSCP < -25	dBm
P-CCPCH RSCP_LEV _91	-25 ≤ P-CCPCH RSCP	dBm

9.1.1.2 CPICH measurements (FDD)

NOTE: This measurement is used for handover between UTRA TDD and UTRA FDD.

These measurements consider *CPICH RSCP* and *CPICH Ec/Io* measurements. The requirements in this section are valid for terminals supporting this capability.

The measurement period for CELL_DCH state and CELL_FACH state can be found in section 8.

9.1.1.2.1 CPICH RSCP

9.1.1.2.1.1 Inter frequency measurement absolute accuracy requirement

The accuracy requirements in table 9.5 are valid under the following conditions:

CPICH_RSCP1$|_{\text{dBm}} \geq$ -114 dBm.

$$\left.\frac{I_o}{\left(\hat{I}_{or}\right)}\right|_{in\ dB} - \left.\left(\frac{CPICH_E_c}{I_{or}}\right)\right|_{in\ dB} \leq 20dB$$

Table 9.5: CPICH_RSCP Inter frequency absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm/ 3.84 MHz]
CPICH_RSCP	dBm	± 6	± 9	-94...-70
	dBm	± 8	± 11	-70...-50

9.1.1.2.1.2 Range/mapping

The reporting range for *CPICH RSCP* is from -120 ...-25 dBm.

In table 9.6 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.6

Reported value	Measured quantity value	Unit
CPICH_RSCP_LEV _-05	CPICH RSCP <-120	dBm
CPICH_RSCP_LEV _-04	-120 ≤ CPICH RSCP < -119	dBm
CPICH_RSCP_LEV _-03	-119 ≤ CPICH RSCP < -118	dBm
…	…	…
CPICH_RSCP_LEV _89	-27 ≤ CPICH RSCP < -26	dBm
CPICH_RSCP_LEV _90	-26 ≤ CPICH RSCP < -25	dBm
CPICH_RSCP_LEV _91	-25 ≤ CPICH RSCP	dBm

9.1.1.2.2 CPICH Ec/Io

9.1.1.2.2.1 Inter frequency measurement relative accuracy requirement

The relative accuracy of CPICH Ec/Io is defined as the CPICH Ec/Io measured from one cell compared to the CPICH Ec/Io measured from another cell on a different frequency.

The accuracy requirements in table 9.7 are valid under the following conditions:

CPICH_RSC1,2 ≥ -114 dBm.

$$\left| CPICH_RSCP1\big|_{in\ dBm} - CPICH_RSCP2\big|_{in\ dBm} \right| \le 20dB$$

$|\text{Channel 1_Io}|_{\text{dBm/3.84 MHz}}$ -$\text{Channel 2_Io}|_{\text{dBm/3.84 MHz}}| \le 20$ dB

$$\left| \frac{I_o}{\left(\hat{I}_{or}\right)} \right|_{in\ dB} - \left| \left(\frac{CPICH_E_c}{I_{or}} \right) \right|_{in\ dB} \le 20dB$$

Table 9.7: CPICH Ec/Io Inter frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm/3.84 MHz]
CPICH_Ec/Io	dB	± 1.5 for -14 ≤ CPICH Ec/Io ± 2 for -16 ≤ CPICH Ec/Io < -14 ± 3 for -20 ≤ CPICH Ec/Io < -16	± 3	-94...-50

9.1.1.2.2.2 Range/mapping

The reporting range for *CPICH Ec/Io* is from -24 ...0 dB.

In table 9.8 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.8

Reported value	Measured quantity value	Unit
CPICH_Ec/Io _00	CPICH Ec/Io < -24	dB
CPICH_Ec/Io _01	-24 ≤ CPICH Ec/Io < -23.5	dB
CPICH_Ec/Io _02	-23.5 ≤ CPICH Ec/Io < -23	dB
…	…	…
CPICH_Ec/Io _47	-1 ≤ CPICH Ec/Io < -0.5	dB
CPICH_Ec/Io _48	-0.5 ≤ CPICH Ec/Io < 0	dB
CPICH_Ec/Io _49	0 ≤ CPICH Ec/Io	dB

9.1.1.3 Timeslot ISCP

The measurement period for CELL_DCH state and CELL_FACH state can be found in section 8.

9.1.1.3.1 Absolute accuracy requirements

9.1.1.3.1.1 3.84 Mcps TDD option

Table 9.9: Timeslot_ISCP Intra frequency absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm/ 3.84 MHz]
Timeslot_ISCP	dBm	± 6	± 9	-94...-70
	dBm	± 8	± 11	-70...-50

9.1.1.3.1.2 1.28 Mcps TDD option

Table 9.9A: Timeslot_ISCP Intra frequency absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm/ 1.28MHz]
Timeslot_ISCP	dBm	± 6	± 9	-94...-70
	dBm	± 8	± 11	-70...-50

9.1.1.3.1.3 7.68 Mcps TDD option

Table 9.9B: Timeslot_ISCP Intra frequency absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm/ 7.68 MHz]
Timeslot_ISCP	dBm	± 6	± 9	-94...-70
	dBm	± 8	± 11	-70...-50

9.1.1.3.2 Range/mapping

The reporting range for *Timeslot ISCP* is from -115...-25 dBm.

In table 9.10 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.10

Reported value	Measured quantity value	Unit
UE_TS_ISCP_LEV_00	Timeslot_ISCP < -115	dBm
UE_TS_ISCP_LEV_01	-115 ≤ Timeslot_ISCP < -114	dBm
UE_TS_ISCP_LEV_02	-114 ≤ Timeslot_ISCP < -113	dBm
…	…	…
UE_TS_ISCP_LEV_89	-27 ≤ Timeslot_ISCP < -26	dBm
UE_TS_ISCP_LEV_90	-26 ≤ Timeslot_ISCP < -25	dBm
UE_TS_ISCP_LEV_91	-25 ≤ Timeslot_ISCP	dBm

9.1.1.4 UTRA carrier RSSI

NOTE: The purpose of measurement is for Inter-frequency handover evaluation.

The measurement period is equal to the measurement period for UE P-CCPCH RSCP measurement. The measurement period for CELL_DCH state can be found in section 8.

9.1.1.4.1 Absolute accuracy requirement

Absolute accuracy case only one carrier is applied.

9.1.1.4.1.1 3.84 Mcps TDD option

Table 9.11: UTRA carrier RSSI Inter frequency absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm/ 3.84 MHz]
UTRA Carrier RSSI	dBm	± 4	± 7	-94...-70
	dBm	± 6	± 9	-70...-50

9.1.1.4.1.2 1.28 Mcps TDD option

Table 9.11A: UTRA carrier RSSI Inter frequency absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm/ 1.28MHz]
UTRA Carrier RSSI	dBm	± 4	± 7	-94...-70
	dBm	± 6	± 9	-70...-50

9.1.1.4.1.3 7.68 Mcps TDD option

Table 9.11B: UTRA carrier RSSI Inter frequency absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm/ 7.68 MHz]
UTRA Carrier RSSI	dBm	± 4	± 7	-94...-70
	dBm	± 6	± 9	-70...-50

9.1.1.4.2 Relative accuracy requirement

Relative accuracy requirement is defined as active cell frequency UTRAN RSSI compared to measured other frequency UTRAN RSSI level.

9.1.1.4.2.1 3.84 Mcps TDD option

The accuracy requirements in table 9.12 are valid under the following conditions:

$| \text{Channel 1_Io}|_{\text{dBm/3.84 MHz}} - \text{Channel 2_Io}|_{\text{dBm/3.84 MHz}} | < 20$ dB.

Table 9.12: UTRA carrier RSSI Inter frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm/3.84 MHz]
UTRA Carrier RSSI	dBm	± 7	± 11	-94...-50

9.1.1.4.2.2 1.28 Mcps TDD option

The accuracy requirements in table 9.12A are valid under the following conditions:

$| \text{Channel 1_Io}|_{\text{dBm/1.28 MHz}} - \text{Channel 2_Io}|_{\text{dBm/1.28 MHz}} | < 20$ dB.

Table 9.12A: UTRA carrier RSSI Inter frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm/1.28 MHz]
UTRA Carrier RSSI	dBm	± 7	± 11	-94...-50

9.1.1.4.2.3 7.68 Mcps TDD option

The accuracy requirements in table 9.12B are valid under the following conditions:

$| \text{Channel 1_Io}|_{\text{dBm/7.68 MHz}} - \text{Channel 2_Io}|_{\text{dBm/7.68 MHz}} | < 20$ dB.

Table 9.12B: UTRA carrier RSSI Inter frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm/7.68 MHz]
UTRA Carrier RSSI	dBm	± 7	± 11	-94...-50

9.1.1.4.3 Range/mapping

The reporting range for *UTRA carrier RSSI* is from -100 ...-25 dBm.

In table 9.13 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.13

Reported value	Measured quantity value	Unit
UTRA_carrier_RSSI_LEV _00	UTRA carrier RSSI < -100	dBm
UTRA_carrier_RSSI_LEV _01	-100 ≤ UTRA carrier RSSI < -99	dBm
UTRA_carrier_RSSI_LEV _02	-99 ≤ UTRA carrier RSSI < -98	dBm
…	…	…
UTRA_carrier_RSSI_LEV _74	-27 ≤ UTRA carrier RSSI < -26	dBm
UTRA_carrier_RSSI_LEV _75	-26 ≤ UTRA carrier RSSI < -25	dBm
UTRA_carrier_RSSI_LEV _76	-25 ≤ UTRA carrier RSSI	dBm

9.1.1.5 GSM carrier RSSI

NOTE: This measurement is for handover between UTRAN and GSM.

The requirements in this section are valid for terminals supporting this capability.

The measurement period for CELL_DCH state can be found in section 8.1.2.5, 8.1A.2.5 and 8.1B.2.5. The measurement period for CELL_FACH state can be found in section 8.4.2.5, 8.4A.2.5 and 8.4B.2.5.

If the UE, in CELL_DCH state, does not need idle intervals to perform GSM measurements, the measurement accuracy requirements for RXLEV in TS 45.008 shall apply.

If the UE, in CELL_DCH state needs idle intervals to perform GSM measurements, the measurement accuracy requirement is stated in section 8.1.2.5, 8.1A.2.5 and 8.1B.2.5.

If the UE, in CELL_FACH state, does not need measurement occasions and/or idle intervals to perform GSM measurements, the measurement accuracy requirements for RXLEV in TS 45.008 shall apply.

If the UE, in CELL_FACH state needs measurement occasions and/or idle intervals to perform GSM measurements, the measurement accuracy requirement is stated in section 8.4.2.5, 8.4A.2.5 and 8.4B.2.5.

The reporting range and mapping specified for RXLEV in TS 45.008 shall apply.

9.1.1.5a E-UTRAN RSRP

NOTE: This measurement is for handover between UTRAN and E-UTRAN.

The requirements in this section are valid for terminals supporting this capability.

The measurement period for E-UTRA RSRP in CELL_DCH state can be found in section 8.1.2.7 / 8.1.2.8, section 8.1A.2.6 / 8.1A.2.7 and section 8.1B.2.7 / 8.1B.2.8.

In Cell DCH state, whether or not UE requires idle intervals to perform E-UTRAN measurements, the requirements for accuracy of E-UTRA RSRP measurements in CELL_DCH state shall be the same as the inter-frequency RSRP Accuracy Requirements in 3GPP TS 36.133 [24].

The reporting range and mapping specified for RSRP in 3GPP TS 36.133 [24] shall apply.

9.1.1.5b E-UTRAN RSRQ

NOTE: This measurement is for handover between UTRAN and E-UTRAN.

The requirements in this section are valid for terminals supporting this capability.

The measurement period for E-UTRA RSRQ in CELL_DCH state can be found in section 8.1.2.7 / 8.1.2.8, section 8.1A.2.6 / 8.1A.2.7 and section 8.1B.2.7 / 8.1B.2.8.

In CELL DCH state, whether or not UE requires idle intervals to perform E-UTRAN measurements, the requirements for accuracy of E-UTRA RSRQ measurements in CELL_DCH state shall be the same as the inter-frequency RSRQ Accuracy Requirements in 3GPP TS 36.133 [24].

The reporting range and mapping specified for RSRQ in 3GPP TS 36.133 [24] shall apply.

9.1.1.6 SIR

The measurement period is equal to the measurement period for UE P-CCPCH RSCP measurement.The measurement period for CELL_DCH state and CELL_FACH state can be found in section 8.

9.1.1.6.1 Absolute accuracy requirements

9.1.1.6.1.1 3.84 Mcps TDD option

Table 9.14: SIR Intra frequency absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	
SIR	dB	±3 dB	[]	For 0<SIR<20dB and Io range -94...-50 dBm/3.84MHz
SIR	dB	±(3 - SIR)	[]	For -7 ≤ SIR ≤ 0 dB and Io range -94...-50 dBm/3.84MHz

9.1.1.6.1.2 1.28 Mcps TDD option

Table 9.14A: SIR Intra frequency absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	
SIR	dB	±3 dB	[]	For 0<SIR<20dB and Io range -94...-50 dBm/1.28MHz
SIR	dB	±(3 - SIR)	[]	For -7 ≤ SIR ≤ 0 dB and Io range -94...-50 dBm/1.28MHz

9.1.1.6.1.3 7.68 Mcps TDD option

Table 9.14B: SIR Intra frequency absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	
SIR	dB	±3 dB	[]	For 0<SIR<20dB and Io range -94...-50 dBm/7.68MHz
SIR	dB	±(3 - SIR)	[]	For -7 ≤ SIR ≤ 0 dB and Io range -94...-50 dBm/7.68MHz

9.1.1.6.2 Range/mapping

The reporting range for *SIR* is from -11 ...20 dB.

In table 9.15 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.15

Reported value	Measured quantity value	Unit
UE_SIR_00	SIR< -11,0	dB
UE_SIR_01	-11,0 ≤ SIR< -10,5	dB
UE_SIR_02	-10,5 ≤ SIR< -10,0	dB
…	…	…
UE_SIR_61	-19 ≤ SIR< 19,5	dB
UE_SIR_62	19,5 ≤ SIR< 20	dB
UE_SIR_63	20 ≤ SIR	dB

9.1.1.7 Transport channel BLER

9.1.1.7.1 BLER measurement requirement

The Transport Channel BLER value shall be calculated from a window with the size equal to the reporting interval (see clause on periodical reporting criteria in TS 25.331).

9.1.1.7.2 Range/mapping

The *Transport channel BLER* reporting range is from 0 to 1.

In table 9.16 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.16

Reported value	Measured quantity value	Unit
BLER_LOG _00	Transport channel BLER = 0	-
BLER_LOG _01	-∞ < Log10(Transport channel BLER) < -4,03	-
BLER_LOG _02	-4,03 ≤ Log10(Transport channel BLER) < -3,965	-
BLER_LOG _03	-3,965 ≤ Log10(Transport channel BLER) < -3,9	-
…	…	…
BLER_LOG _61	-0,195 ≤ Log10(Transport channel BLER) < -0,13	-
BLER_LOG _62	-0,13 ≤ Log10(Transport channel BLER) < -0,065	-
BLER_LOG _63	-0,065 ≤ Log10(Transport channel BLER) ≤ 0	-

9.1.1.8 SFN-SFN observed time difference

The measurement period is equal to the measurement period for UE P-CCPCH RSCP measurement. The measurement period for CELL_DCH state and CELL_FACH state can be found in section 8.

9.1.1.8.1 Accuracy requirements

9.1.1.8.1.1 3.84 Mcps TDD option

The accuracy requirement in table 9.17 is valid under the following conditions:

P-CCPCH_RSCP1,2 ≥ -102 dBm..

$$\left|\text{P - CCPCH RSCP1}\right|_{in\ dBm} - \text{P - CCPCH RSCP2}\left|_{in\ dBm}\right| \leq 20dB$$

The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1.2.6.

Table 9.17: SFN-SFN observed time difference accuracy

Parameter	Unit	Accuracy [chip]	Conditions
			Io [dBm/3.84 MHz]
SFN-SFN observed time difference	chip	+/-0,5 for both type 1 and 2	-94...-50

9.1.1.8.1.2 1.28 Mcps TDD option

The accuracy requirements in table 9.3B are valid under the following conditions:

P-CCPCH RSCP1,2 ≥ -102 dBm.

$$\left|\text{P - CCPCH RSCP1}\right|_{in\ dBm} - \text{P - CCPCH RSCP2}\left|_{in\ dBm}\right| \leq 20dB$$

P-CCPCH Ec/Io $\underline{\geq}$ -8 dB

DwPCH_Ec/Io $\underline{\geq}$ -5 dB

Table 9.17A: SFN-SFN observed time difference accuracy

Parameter	Unit	Accuracy [chip]	Conditions
			Io [dBm/ 1.28 MHz]
SFN-SFN observed time difference	chip	+/-0,5 for type 1 but +/- 0.125 for type 2	-94...-50

9.1.1.8.1.3 7.68 Mcps TDD option

The accuracy requirement in table 9.17B is valid under the following conditions:

P-CCPCH_RSCP1,2 ≥ -102 dBm..

$$\left| \text{P - CCPCH RSCP1}|_{in\ dBm} - \text{P - CCPCH RSCP2}|_{in\ dBm} \right| \leq 20dB$$

The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1B.2.6.

Table 9.17B: SFN-SFN observed time difference accuracy

Parameter	Unit	Accuracy [chip]	Conditions
			Io [dBm/7.68 MHz]
SFN-SFN observed time difference	chip	+/-1 for both type 1 and 2	-94...-50

9.1.1.8.2 Range/mapping

9.1.1.8.2.1 3.84 Mcps TDD option

The reporting range for *SFN-SFN observed time difference type 1* is from 0 ... 9830400 chip.

In table 9.18 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.18

Reported value	Measured quantity value	Unit
T1_SFN-SFN_TIME _0000000	0 ≤ SFN-SFN observed time difference type 1 < 1	chip
T1_SFN-SFN_TIME _0000001	1 ≤ SFN-SFN observed time difference type 1 < 2	chip
T1_SFN-SFN_TIME _0000002	2 ≤ SFN-SFN observed time difference type 1 < 3	chip
…	…	…
T1_SFN-SFN_TIME _9830397	9830397 ≤ SFN-SFN observed time difference type 1 < 9830398	chip
T1_SFN-SFN_TIME _9830398	9830398 ≤ SFN-SFN observed time difference type 1 < 980399	chip
T1_SFN-SFN_TIME _9830399	9830399 ≤ SFN-SFN observed time difference type 1 < 9830400	chip

The reporting range for *SFN-SFN observed time difference type 2* is from -1280 ... +1280 chip.

In table 9.19 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.19

Reported value	Measured quantity value	Unit
T2_SFN-SFN_TIME _00000	SFN-SFN observed time difference type 2 < -1280,0000	chip
T2_SFN-SFN_TIME _00001	-1280,0000 ≤ SFN-SFN observed time difference type 2 < -1279,9375	chip
T2_SFN-SFN_TIME _00002	-1279,9375 ≤ SFN-SFN observed time difference type 2 < -1279,8750	chip
…	…	…
T2_SFN-SFN_TIME _40959	1279,8750 ≤ SFN-SFN observed time difference type 2 < 1279,9375	chip
T2_SFN-SFN_TIME _40960	1279,9375 ≤ SFN-SFN observed time difference type 2 < 1280,0000	chip
T2_SFN-SFN_TIME _40961	1280,0000 ≤ SFN-SFN observed time difference type 2	chip

9.1.1.8.2.2 1.28 Mcps TDD option

The reporting range for *SFN-SFN observed time difference type 1* is from 0 ... 3276800 chip.

In table 9.18A mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.18A

Reported value	Measured quantity value	Unit
T1_SFN-SFN_TIME _0000000	0 ≤ SFN-SFN observed time difference type 1 < 1	chip
T1_SFN-SFN_TIME _0000001	1 ≤ SFN-SFN observed time difference type 1 < 2	chip
T1_SFN-SFN_TIME _0000002	2 ≤ SFN-SFN observed time difference type 1 < 3	chip
…	…	…
T1_SFN-SFN_TIME _3276797	3276797 ≤ SFN-SFN observed time difference type 1 < 3276798	chip
T1_SFN-SFN_TIME _3276798	3276798 ≤ SFN-SFN observed time difference type 1 < 3276799	chip
T1_SFN-SFN_TIME _3276799	3276799 ≤ SFN-SFN observed time difference type 1 < 3276800	chip

The reporting range for *SFN-SFN observed time difference type 2* is from -432 ... +432 chip.

In table 9.19A mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.19A

Reported value	Measured quantity value	Unit
T2_SFN-SFN_TIME _00000	SFN-SFN observed time difference type 2 < -432,00000	chip
T2_SFN-SFN_TIME _00001	-432,00000 ≤ SFN-SFN observed time difference type 2 < -431,96875	chip
T2_SFN-SFN_TIME _00002	-431,96875 ≤ SFN-SFN observed time difference type 2 < -431,9375	chip
…	…	…
T2_SFN-SFN_TIME _27647	431,9375 ≤ SFN-SFN observed time difference type 2 < 431,96875	chip
T2_SFN-SFN_TIME _27648	431,96875 ≤ SFN-SFN observed time difference type 2 < 432,00000	chip
T2_SFN-SFN_TIME _27649	432,00000 ≤ SFN-SFN observed time difference type 2	chip

9.1.1.8.2.3 7.68 Mcps TDD option

The reporting range for *SFN-SFN observed time difference type 1* is from 0 ... 19660800 chip.

In table 9.18B mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.18B

Reported value	Measured quantity value	Unit
T1_SFN-SFN_TIME _0000000	0 ≤ SFN-SFN observed time difference type 1 < 2	chip
T1_SFN-SFN_TIME _0000001	2 ≤ SFN-SFN observed time difference type 1 < 4	chip
T1_SFN-SFN_TIME _0000002	4 ≤ SFN-SFN observed time difference type 1 < 6	chip
…	…	…
T1_SFN-SFN_TIME _9830397	19660794 ≤ SFN-SFN observed time difference type 1 < 19660796	chip
T1_SFN-SFN_TIME _9830398	19660796 ≤ SFN-SFN observed time difference type 1 < 19660798	chip
T1_SFN-SFN_TIME _9830399	19660798 ≤ SFN-SFN observed time difference type 1 < 19660800	chip

The reporting range for *SFN-SFN observed time difference type 2* is from -2560 ... +2560 chip.

In table 9.19B mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.19B

Reported value	Measured quantity value	Unit
T2_SFN-SFN_TIME _00000	SFN-SFN observed time difference type 2 < -2560,0000	chip
T2_SFN-SFN_TIME _00001	-2560,0000 ≤ SFN-SFN observed time difference type 2 < -2559,875	chip
T2_SFN-SFN_TIME _00002	-2559,875 ≤ SFN-SFN observed time difference type 2 < -2559.750	chip
…	…	…
T2_SFN-SFN_TIME _40959	2559.750 ≤ SFN-SFN observed time difference type 2 < 2559,875	chip
T2_SFN-SFN_TIME _40960	2559,875 ≤ SFN-SFN observed time difference type 2 < 2560,0000	chip
T2_SFN-SFN_TIME _40961	2560,0000 ≤ SFN-SFN observed time difference type 2	chip

9.1.1.9 Observed time difference to GSM cell

NOTE: This measurement is used to determine the system time difference between UTRAN and GSM cells.

The requirements in this section are valid for terminals supporting UTRA TDD and GSM.

The measurement period for CELL_DCH state can be found in section 8.

9.1.1.9.1 Accuracy requirements

Table 9.20 Observed time difference to GSM cell accuracy

Parameter	Unit	Accuracy [chip]	Conditions
Observed time difference to GSM cell	chip	± 20	

9.1.1.9.2 Range/mapping

The reporting range for *Observed time difference to GSM cell* is from 0 ... 3060/13 ms.

In table 9.21 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.21

Reported value	Measured quantity value	Unit
GSM_TIME _0000	0 ≤ Observed time difference to GSM cell < 1x3060/(4096x13)	ms
GSM_TIME _0001	1x3060/(4096x13) ≤ Observed time difference to GSM cell < 2x3060/(4096x13)	ms
GSM_TIME _0002	2x3060/(4096x13)≤ Observed time difference to GSM cell < 3x3060/(4096x13)	ms
GSM_TIME _0003	3x3060/(4096x13) ≤ Observed time difference to GSM cell < 4x3060/(4096x13)	ms
…	…	…
GSM_TIME _4093	4093x3060/(4096x13) ≤ Observed time difference to GSM cell < 4094x3060/(4096x13)	ms
GSM_TIME _4094	4094x3060/(4096x13) ≤ Observed time difference to GSM cell < 4095x3060/(4096x13)	ms
GSM_TIME _4095	4095x3060/(4096x13) ≤ Observed time difference to GSM cell < 3060/13	ms

9.1.1.10 UE GPS Timing of Cell Frames for UP

9.1.1.10.1 Accuracy requirement

9.1.1.10.1.1 3.84 Mcps TDD Option

The requirements in this section are valid for terminals supporting this capability

The measurement period for CELL_DCH state and CELL_FACH state can be found in section 8.

Table 9.22

Parameter	Unit	Accuracy [chip]	Conditions
UE GPS Timing of Cell Frames for LCS	chip	[]	

9.1.1.10.1.2 1.28 Mcps TDD Option

The requirements in this section are valid for terminals supporting this capability

The measurement period for CELL_DCH state and CELL_FACH state can be found in section 8.

Table 9.22A

Parameter	Unit	Accuracy [chip]	Conditions
UE GPS Timing of Cell Frames for LCS	chip	[]	

9.1.1.10.1.3 7.68 Mcps TDD Option

The requirements in this section are valid for terminals supporting this capability

The measurement period for CELL_DCH state and CELL_FACH state can be found in section 8.

Table 9.22B

Parameter	Unit	Accuracy [chip]	Conditions
UE GPS Timing of Cell Frames for LCS	chip	[]	

9.1.1.10.2 UE GPS timing of Cell Frames for UP measurement report mapping

9.1.1.10.2.1 3.84 Mcps TDD Option

The reporting range for *UE GPS timing of Cell Frames for UP* is from 0 ... 2322432000000 chip.

In table 9.23 mapping of the measured quantity is defined.

Table 9.23

Reported value	Measured quantity value	Unit
GPS_TIME_00000000000000	UE GPS timing of Cell Frames for UP < 0,0625	chip
GPS_TIME_00000000000001	0,0625 ≤ UE GPS timing of Cell Frames for UP < 0,1250	chip
GPS_TIME_00000000000002	0,1250 ≤ UE GPS timing of Cell Frames for UP < 0,1875	chip
...	...	...
GPS_TIME_37158911999997	2322431999999,8125 ≤ UE GPS timing of Cell Frames for UP < 2322431999999,8750	chip
GPS_TIME_37158911999998	2322431999999,8750 ≤ UE GPS timing of Cell Frames for UP < 2322431999999,9375	chip
GPS_TIME_37158911999999	2322431999999,9375 ≤ UE GPS timing of Cell Frames for UP < 2322432000000,0000	chip

9.1.1.10.2.2 1.28 Mcps TDD Option

The reporting range for *UE GPS timing of Cell Frames for UP* is from 0 ... 774144000000 chip.

In table 9.23A mapping of the measured quantity is defined.

Table 9.23A

Reported value	Measured quantity value	Unit
GPS_TIME_0000000000000	UE GPS timing of Cell Frames for UP< 0,25	chip
GPS_TIME_0000000000001	0,25 ≤ UE GPS timing of Cell Frames for UP< 0,50	chip
GPS_TIME_0000000000002	0,50 ≤ UE GPS timing of Cell Frames for UP < 0,75	chip
...	...	...
GPS_TIME_3096575999997	774143999999,25 ≤ UE GPS timing of Cell Frames for UP < 774143999999,50	chip
GPS_TIME_3096575999998	774143999999,50 ≤ UE GPS timing of Cell Frames for UP < 774143999999,75	chip
GPS_TIME_3096575999999	774143999999,75 ≤ UE GPS timing of Cell Frames for UP < 774144000000,00	chip

9.1.1.10.2.3 7.68 Mcps TDD Option

The reporting range for *UE GPS timing of Cell Frames for UP* is from 0 ... 4644864000000 chip.

In table 9.23B mapping of the measured quantity is defined.

Table 9.23B

Reported value	Measured quantity value	Unit
GPS_TIME_00000000000000	UE GPS timing of Cell Frames for UP < 0,125	chip
GPS_TIME_00000000000001	0,125 ≤ UE GPS timing of Cell Frames for UP < 0,250	chip
GPS_TIME_00000000000002	0,250 ≤ UE GPS timing of Cell Frames for UP < 0,375	chip
...	...	...
GPS_TIME_37158911999997	4644863999999,625 ≤ UE GPS timing of Cell Frames for UP < 4644863999999,750	chip
GPS_TIME_37158911999998	4644863999999,750 ≤ UE GPS timing of Cell Frames for UP < 4644863999999,875	chip
GPS_TIME_37158911999999	4644863999999,875 ≤ UE GPS timing of Cell Frames for UP < 4644864000000,0000	chip

9.1.1.11 SFN-CFN observed time difference

NOTE: This measurement is for handover timing purposes to identify active cell and neighbour cell time difference.

The measurement period is equal to the measurement period for UE P-CCPCH RSCP measurement. The measurement period for CELL_DCH state can be found in section 8.

9.1.1.11.1 Accuracy requirements

9.1.1.11.1.1 3.84 Mcps TDD Option

The accuracy requirements in tables 9.24 are valid under the following conditions:

P-CCPCH_RSCP1,2 ≥ -102dBm.

$$\left|\text{P - CCPCH RSCP1}\right|_{in\ dBm} - \text{P - CCPCH RSCP2}\left|_{in\ dBm}\right| \leq 20dB$$

The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1.2.6

Table 9.24 SFN-CFN observed time difference accuracy for a TDD neighbour cell

Parameter	Unit	Accuracy [chip]	Conditions
			Io [dBm/3.84 MHz]
SFN-CFN observed time difference	chip	+/-0,5	-94...-50

The accuracy requirements in table 9.25 are valid under the following conditions:

CPICH_RSCP1,2 ≥ -114 dBm.

$$\left|CPICH_RSCP1\right|_{in\ dBm} - CPICH_RSCP2\left|_{in\ dBm}\right| \leq 20dB$$

The received signal levels on SCH and CPICH are according the requirements in paragraph 8.1.2.6.

Table 9.25: SFN-CFN observed time difference accuracy for a FDD neighbour cell

Parameter	Unit	Accuracy [chip]	Conditions
			Io [dBm/3.84 MHz]
SFN-CFN observed time difference	chip	+/-1	-94...-50

9.1.1.11.1.2 1.28 Mcps TDD Option

The accuracy requirements in tables 9.25A are valid under the following conditions:

P-CCPCH_RSCP1,2 ≥ -102dBm.

$$\left|\text{P - CCPCH RSCP1}\right|_{in\ dBm} - \text{P - CCPCH RSCP2}\left|_{in\ dBm}\right| \leq 20dB$$

P-CCPCH Ec/Io $\underline{\geq}$ -8 dB

DwPCH_Ec/Io $\underline{\geq}$ -5 dB

Table 9.25A SFN-CFN observed time difference accuracy for a TDD neighbour cell

Parameter	Unit	Accuracy [chip]	Conditions
			Io [dBm/1.28 MHz]
SFN-CFN observed time difference	chip	+/-0,5	-94...-50

The accuracy requirements in table 9.25B are valid under the following conditions:

CPICH_RSCP1,2 ≥ -114 dBm.

$$\left| CPICH_RSCP1 \right|_{in\ dBm} - CPICH_RSCP2 \left|_{in\ dBm} \right| \leq 20dB$$

The received signal levels on SCH and CPICH are according the requirements in paragraph 8.1.2.6

Table 9.25B SFN-CFN observed time difference accuracy for a FDD neighbour cell

Parameter	Unit	Accuracy [chip]	Conditions
			Io [dBm/3.84MHz]
SFN-CFN observed time difference	chip	+/-1	-94...-50

9.1.1.11.1.3 7.68 Mcps TDD Option

The accuracy requirements in tables 9.25C are valid under the following conditions:

P-CCPCH_RSCP1,2 ≥ -102dBm.

$$\left| \text{P - CCPCH RSCP1} \right|_{in\ dBm} - \text{P - CCPCH RSCP2} \left|_{in\ dBm} \right| \leq 20dB$$

The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1B.2.6

Table 9.25C: SFN-CFN observed time difference accuracy for a TDD neighbour cell

Parameter	Unit	Accuracy [chip]	Conditions
			Io [dBm/7.68 MHz]
SFN-CFN observed time difference	chip	+/-1	-94...-50

The accuracy requirements in table 9.25D are valid under the following conditions:

CPICH_RSCP1,2 ≥ -114 dBm.

$$\left| CPICH_RSCP1 \right|_{in\ dBm} - CPICH_RSCP2 \left|_{in\ dBm} \right| \leq 20dB$$

The received signal levels on SCH and CPICH are according the requirements in paragraph 8.1B.2.6.

Table 9.25D: SFN-CFN observed time difference accuracy for a FDD neighbour cell

Parameter	Unit	Accuracy [chip]	Conditions
			Io [dBm/3.84 MHz]
SFN-CFN observed time difference	chip	+/-2	-94...-50

9.1.1.11.2 Range/mapping

The reporting range for SFN-CFN observed time difference for a TDD neighbour cell is from 0...256 frames.

In table 9.26 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.26: SFN-CFN observed time difference range/mapping for a TDD neighbour cell

Reported value	Measured quantity value	Unit
SFN-CFN_TIME_000	0 ≤ SFN-CFN observed time difference < 1	frame
SFN-CFN_TIME_001	1 ≤ SFN-CFN observed time difference < 2	frame
SFN-CFN_TIME_002	2 ≤ SFN-CFN observed time difference < 3	frame
…	…	…
SFN-CFN_TIME_253	253 ≤ SFN-CFN observed time difference < 254	frame
SFN-CFN_TIME_254	254 ≤ SFN-CFN observed time difference < 255	frame
SFN-CFN_TIME_255	255 ≤ SFN-CFN observed time difference < 256	frame

The reporting range for *SFN-CFN observed time difference* for a FDD neighbour cell is from 0 ... 9830400 chip.

In table 9.27 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.27: SFN-CFN observed time difference range/mapping for a FDD neighbour cell

Reported value	Measured quantity value	Unit
SFN-CFN_TIME _0000000	0 ≤ SFN-CFN observed time difference < 1	chip
SFN-CFN_TIME _0000001	1 ≤ SFN-CFN observed time difference < 2	chip
SFN-CFN_TIME _0000002	2 ≤ SFN-CFN observed time difference < 3	chip
…	…	…
SFN-CFN_TIME _9830397	9830397 ≤ SFN-CFN observed time difference < 9830398	chip
SFN-CFN_TIME _9830398	9830398 ≤ SFN-CFN observed time difference < 980399	chip
SFN-CFN_TIME _9830399	9830399 ≤ SFN-CFN observed time difference < 9830400	chip

9.1.2 Performance for UE Measurements in Uplink (TX)

The output power is defined as the average power of the transmit timeslot, and is measured with a filter that has a Root-Raised Cosine (RRC) filter response with a roll off $\alpha = 0,22$ and a bandwidth equal to the chip rate.

9.1.2.1 UE transmitted power

The measurement period for CELL_DCH state and CELL_FACH state is 1 slot.

9.1.2.1.1 Absolute accuracy requirements

Table 9.28 UE transmitted power absolute accuracy

Parameter	Unit	Accuracy [dB]	
		PUEMAX 24dBm	PUEMAX 21dBm
UE transmitted power=PUEMAX	dBm	+1/-3	±2
UE transmitted power=PUEMAX-1	dBm	+1,5/-3,5	±2,5
UE transmitted power=PUEMAX-2	dBm	+2/-4	±3
UE transmitted power=PUEMAX-3	dBm	+2,5/-4,5	±3,5
PUEMAX-10≤UE transmitted power<PUEMAX-3	dBm	+3/-5	±4

NOTE 1: User equipment maximum output power, PUEMAX, is the maximum output power level without tolerance defined for the power class of the UE in 3GPP TS 25.102 "UTRA (UE) TDD; Radio Transmission and Reception".

NOTE 2: UE transmitted power is the reported value.

9.1.2.1.2 Range/mapping

The reporting range for *UE transmitted power* is from -50 ...+34 dBm.

In table 9.29 mapping of the measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.29

Reported value	Measured quantity value	Unit
UE_TX_POWER _021	-50 ≤ UE transmitted power < -49	dBm
UE_TX_POWER _022	-49 ≤ UE transmitted power < -48	dBm
UE_TX_POWER _023	-48 ≤ UE transmitted power < -47	dBm
…	…	…
UE_TX_POWER _102	31 ≤ UE transmitted power < 32	dBm
UE_TX_POWER _103	32 ≤ UE transmitted power < 33	dBm
UE_TX_POWER _104	33 ≤ UE transmitted power < 34	dBm

9.1.2.2 Timing Advance (T_{ADV}) for 1.28 Mcps TDD

This measurement refers to TS25.225 subsection 5.1.14.

9.1.2.2.1 Accuracy requirements

Table 9.28A

Parameter	Unit	Accuracy [chip]	Conditions
			Range [chips]
Timing Advance	chip	+/- 0.125	0, …, 1023.875

9.1.2.2.2 Range/mapping

The reporting range for *Timing Advance* is from 0 ... 1023..875 chips.

In table 9.29A the mapping of the measured quantity is defined. The signalling range may be larger than the guaranteed accuracy range.

Table 9.29A

Reported value	Measured quantity value	Unit
TIMING_ADVANCE_0000	Timing Advance < 0.125	chip
TIMING_ADVANCE_0001	0.125 ≤ Timing Advance < 0.25	chip
…	…	…
TIMING_ADVANCE_1023	127.875≤ Timing Advance < 128	chip
…	…	…
TIMING_ADVANCE_8189	1023.625 ≤ Timing Advance <1023.75	chip
TIMING_ADVANCE_8190	1023.75 ≤ Timing Advance <1023.875	chip
TIMING_ADVANCE_8191	1023.875 ≤Timing Advance	chip

NOTE: This measurement can be used for timing advance (synchronisation shift) calculation for uplink synchronisation or location services.

9.1.2.3 UE transmission power headroom

9.1.2.3.1 3.84Mcps TDD Option

<Void>

9.1.2.3.2 1.28 Mcps TDD Option

This measurement refers to TS25.225 subsection 5.1.16.

9.1.2.3.2.1 Delay requirement

The UE transmission power headroom measurement reporting delay is defined as the time between the end of the UE transmission power headroom measurement period and the time when the UE starts transmitting the measurement report over the Uu interface. The reporting delay of the UE transmission power headroom measurement result shall be not more than 10ms, which is applicable for all configured triggering mechanisms for UE transmission power headroom measurement.

9.1.2.3.1.2 Measurement period requirement

The reported UE transmission power headroom measurement result shall be an estimate of the average value of the UE transmission power headroom over a 100ms period.

9.1.2.3.1.3 UE transmission power headroom measurement report mapping

The UE transmission power headroom reporting range is from -14 ...+28 dB. Table 9.28B defines the mapping

Table 9.28B

Reported value	Measured quantity value	Unit
UE_POWER_HEADROOM _0	UPH < -14	dB
UE_POWER_HEADROOM _1	-14 ≤ UPH < -12	dB
UE_POWER_HEADROOM _2	-12 ≤ UPH < -10	dB
UE_POWER_HEADROOM _3	-10 ≤ UPH < -9	dB
UE_POWER_HEADROOM _4	-9 ≤ UPH < -8	dB
UE_POWER_HEADROOM _5	-8 ≤ UPH < -7	dB
UE_POWER_HEADROOM _6	-7 ≤ UPH < -6	dB
UE_POWER_HEADROOM _7	-6 ≤ UPH < -5	dB
UE_POWER_HEADROOM _8	-5 ≤ UPH < -4	dB
UE_POWER_HEADROOM _9	-4≤ UPH < -3	dB
UE_POWER_HEADROOM _10	-3 ≤ UPH < -2	dB
UE_POWER_HEADROOM _11	-2≤ UPH < -1	dB
UE_POWER_HEADROOM _12	-1 ≤ UPH < 0	dB
UE_POWER_HEADROOM _13	0 ≤ UPH < 1	dB
UE_POWER_HEADROOM _14	1 ≤ UPH <2	dB
UE_POWER_HEADROOM _15	2 ≤ UPH < 3	dB
UE_POWER_HEADROOM _16	3≤ UPH < 4	dB
UE_POWER_HEADROOM _17	4 ≤ UPH < 5	dB
UE_POWER_HEADROOM _18	5 ≤ UPH <6	dB
UE_POWER_HEADROOM _19	6 ≤ UPH < 7	dB
UE_POWER_HEADROOM _20	7 ≤ UPH < 8	dB
UE_POWER_HEADROOM _21	8 ≤ UPH <9	dB
UE_POWER_HEADROOM _22	9 ≤ UPH <10	dB
UE_POWER_HEADROOM _23	10 ≤ UPH <11	dB
UE_POWER_HEADROOM _24	11 ≤ UPH <12	dB
UE_POWER_HEADROOM _25	12 ≤ UPH < 14	dB
UE_POWER_HEADROOM _26	14 ≤ UPH <16	dB
UE_POWER_HEADROOM _27	16 ≤ UPH <18	dB
UE_POWER_HEADROOM _28	18 ≤ UPH < 20	dB
UE_POWER_HEADROOM _29	20 ≤ UPH < 23	dB
UE_POWER_HEADROOM _30	23 ≤ UPH <28	dB
UE_POWER_HEADROOM _31	28 ≤ UPH	dB

9.1.2.3.1.4 UE transmission power headroom measurement report accuracy

The accuracy requirements for UE transmission power headroom depends on the total power transmitted by the UE. Table 9.29B defines the accuracy of the measured quantity.

Table 9.29B

Total UE putput power value (dBm)	UPH reporting Accuracy [dB]*	
	PUEMAX 24dBm	PUEMAX 21dBm
Total output power=PUEMAX	+1/-3	±2
Total output power =PUEMAX-1	+1,5/-3,5	±2,5
Total output power =PUEMAX-2	+2/-4	±3
Total output power =PUEMAX-3	+2,5/-4,5	±3,5
PUEMAX-10≤ Total output power <PUEMAX-3	+3/-5	±4
*Note: UPH reporting accuracy is the difference between the UPH reported by the UE and the actual uplink power headroom **Note: PUEMAX, is the maximum output power level without tolerance defined for the power class of the UE in 3GPP TS 25.102		

9.2 Measurements Performance for UTRAN

9.2.1 Performance for UTRAN Measurements in Uplink (RX)

9.2.1.1 RSCP

The measurement period shall be 100 ms.

9.2.1.1.1 Absolute accuracy requirements

9.2.1.1.1.1 3.84 Mcps TDD Option

Table 9.30: RSCP absolute accuracy for Wide Area BS

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm/3.84 MHz]
RSCP	dBm	± 6	± 9	-105..-74

Table 9.30A: RSCP absolute accuracy for Local Area BS

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm/3.84 MHz]
RSCP	dBm	± 6	± 9	-91..-60

9.2.1.1.1.2 1.28 Mcps TDD Option

Table 9.30B: RSCP absolute accuracy for Wide Area BS

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm/1.28 MHz]
RSCP	dBm	± 6	± 9	-105..-74

Table 9.30C: RSCP absolute accuracy for Local Area BS

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm/1.28 MHz]
RSCP	dBm	± 6	± 9	-91..-60

9.2.1.1.1.3 7.68 Mcps TDD Option

Table 9.30D: RSCP absolute accuracy for Wide Area BS

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm/7.68 MHz]
RSCP	dBm	± 6	± 9	-105..-74

Table 9.30E: RSCP absolute accuracy for Local Area BS

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm/7.68 MHz]
RSCP	dBm	± 6	± 9	-91..-60

9.2.1.1.2 Relative accuracy requirements

The relative accuracy of RSCP in inter frequency case is defined as the RSCP measured from one UE compared to the RSCP measured from another UE.

9.2.1.1.2.1 3.84 Mcps TDD Option

Table 9.31: RSCP relative accuracy for Wide Area BS

Parameter	Unit	Accuracy [dB]	Conditions
			Io [dBm/3.84 MHz]
RSCP	dBm	± 3 for intra-frequency	-105..-74

Table 9.31A: RSCP relative accuracy for Local Area BS

Parameter	Unit	Accuracy [dB]	Conditions
			Io [dBm/3.84MHz]
RSCP	dBm	± 3 for intra-frequency	-91..-60

9.2.1.1.2.2 1.28 Mcps TDD Option

Table 9.31B: RSCP relative accuracy for Wide Area BS

Parameter	Unit	Accuracy [dB]	Conditions
			Io [dBm/1.28MHz]
RSCP	dBm	± 3 for intra-frequency	-105..-74

Table 9.31C: RSCP relative accuracy for Local Area BS

Parameter	Unit	Accuracy [dB]	Conditions
			Io [dBm/1.28MHz]
RSCP	dBm	± 3 for intra-frequency	-91..-60

9.2.1.1.2.3 7.68 Mcps TDD Option

Table 9.31D: RSCP relative accuracy for Wide Area BS

Parameter	Unit	Accuracy [dB]	Conditions
			Io [dBm/7.68 MHz]
RSCP	dBm	± 3 for intra-frequency	-105..-74

Table 9.31E: RSCP relative accuracy for Local Area BS

Parameter	Unit	Accuracy [dB]	Conditions
			Io [dBm/7.68MHz]
RSCP	dBm	± 3 for intra-frequency	-91..-60

9.2.1.1.3 Range/mapping

The reporting range for *RSCP* is from -120 ...-57 dBm.

In table 9.32 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.32

Reported value	Measured quantity value	Unit
RSCP_LEV _00	RSCP <-120,0	dBm
RSCP_LEV _01	-120,0 ≤ RSCP < -119,5	dBm
RSCP_LEV _02	-119,5 ≤ RSCP < -119,0	dBm
…	…	…
RSCP_LEV _125	-58,0 ≤ RSCP < -57,5	dBm
RSCP_LEV _126	-57,5 ≤ RSCP < -57,0	dBm
RSCP_LEV _127	-57,0 ≤ RSCP	dBm

9.2.1.2 Timeslot ISCP

The measurement period shall be 100 ms.

9.2.1.2.1 Absolute accuracy requirements

9.2.1.2.1.1 3.84 Mcps TDD Option

Table 9.33: Timeslot ISCP Intra frequency absolute accuracy for Wide Area BS

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm/3.84 MHz]
Timeslot ISCP	dBm	± 6	± 9	-105..-74

Table 9.33A: Timeslot ISCP Intra frequency absolute accuracy for Local Area BS

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm/3.84 MHz]
Timeslot ISCP	dBm	± 6	± 9	-91..-60

9.2.1.2.1.2 1.28 Mcps TDD Option

Table 9.33B: Timeslot ISCP Intra frequency absolute accuracy for Wide Area BS

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm/1.28 MHz]
Timeslot ISCP	dBm	± 6	± 9	-105..-74

Table 9.33C: Timeslot ISCP Intra frequency absolute accuracy for Local Area BS

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm/1.28 MHz]
Timeslot ISCP	dBm	± 6	± 9	-91..-60

9.2.1.2.1.3 7.68 Mcps TDD Option

Table 9.33D: Timeslot ISCP Intra frequency absolute accuracy for Wide Area BS

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm/7.68 MHz]
Timeslot ISCP	dBm	± 6	± 9	-105..-74

Table 9.33E: Timeslot ISCP Intra frequency absolute accuracy for Local Area BS

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm/7.68 MHz]
Timeslot ISCP	dBm	± 6	± 9	-91..-60

9.2.1.2.2 Range/mapping

The reporting range for *Timeslot ISCP* is from -120...-57 dBm.

In table 9.34 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.34

Reported value	Measured quantity value	Unit
UTRAN_TS_ISCP_LEV_00	Timeslot_ISCP < -120,0	dBm
UTRAN_TS_ISCP_LEV_01	-120,0 ≤ Timeslot_ISCP < -119,5	dBm
UTRAN_TS_ISCP_LEV_02	-119,5 ≤ Timeslot_ISCP < -119,0	dBm
…	…	…
UTRAN_TS_ISCP_LEV_125	-58,0 ≤ Timeslot_ISCP < -57,5	dBm
UTRAN_TS_ISCP_LEV_126	-57,5 ≤ Timeslot_ISCP < -57,0	dBm
UTRAN_TS_ISCP_LEV_127	-57,0 ≤ Timeslot_ISCP	dBm

9.2.1.3 Received Total Wide Band Power

The measurement period shall be 100 ms.

9.2.1.3.1 Absolute accuracy requirements

9.2.1.3.1.1 3.84 Mcps TDD Option

Table 9.35: RECEIVED TOTAL WIDE BAND POWER Intra frequency absolute accuracy for Wide Area BS

Parameter	Unit	Accuracy [dB]	Conditions
			Iob [dBm/3.84 MHz]
Iob	dBm/3.84MHz	± 4	-105..-74

Table 9.35A: RECEIVED TOTAL WIDE BAND POWER Intra frequency absolute accuracy for Local Area BS

Parameter	Unit	Accuracy [dB]	Conditions
			Iob [dBm/3.84MHz]
Iob	dBm/3.84MHz	± 4	-91..-60

9.2.1.3.1.2 1.28 Mcps TDD Option

Table 9.35B: RECEIVED TOTAL WIDE BAND POWER Intra frequency absolute accuracy for Wide Area BS

Parameter	Unit	Accuracy [dB]	Conditions
			Iob [dBm/1.28MHz]
Iob	dBm/1.28MHz	± 4	-105..-74

Table 9.35C: RECEIVED TOTAL WIDE BAND POWER Intra frequency absolute accuracy for Local Area BS

Parameter	Unit	Accuracy [dB]	Conditions
			Iob [dBm/1.28MHz]
Iob	dBm/1.28MHz	± 4	-91..-60

9.2.1.3.1.3 7.68 Mcps TDD Option

Table 9.35D: RECEIVED TOTAL WIDE BAND POWER Intra frequency absolute accuracy for Wide Area BS

Parameter	Unit	Accuracy [dB]	Conditions
			Iob [dBm/7.68 MHz]
Iob	dBm/7.68MHz	± 4	-105..-74

Table 9.35E: RECEIVED TOTAL WIDE BAND POWER Intra frequency absolute accuracy for Local Area BS

Parameter	Unit	Accuracy [dB]	Conditions
			Iob [dBm/7.68MHz]
Iob	dBm/7.68MHz	± 4	-91..-60

9.2.1.3.2 Range/mapping

The reporting range for *RECEIVED TOTAL WIDE BAND POWER* is from -112 ... -50 dBm.

In table 9.36 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.36

Reported value	Measured quantity value	Unit
RECEIVED TOTAL WIDE BAND POWER_LEV _000	RECEIVED TOTAL WIDE BAND POWER < -112,0	dBm
RECEIVED TOTAL WIDE BAND POWER_LEV _001	-112,0 ≤ RECEIVED TOTAL WIDE BAND POWER < -111,9	dBm
RECEIVED TOTAL WIDE BAND POWER_LEV _002	-111,9 ≤ RECEIVED TOTAL WIDE BAND POWER < -111,8	dBm
…	…	…
RECEIVED TOTAL WIDE BAND POWER_LEV _619	-50,2 ≤ RECEIVED TOTAL WIDE BAND POWER < -50,1	dBm
RECEIVED TOTAL WIDE BAND POWER_LEV _620	-50,1 ≤ RECEIVED TOTAL WIDE BAND POWER < -50,0	dBm
RECEIVED TOTAL WIDE BAND POWER_LEV _621	-50,0 ≤ RECEIVED TOTAL WIDE BAND POWER	dBm

9.2.1.4 SIR

The measurement period shall be 80 ms.

9.2.1.4.1 Absolute accuracy requirements

9.2.1.4.1.1 3.84 Mcps TDD Option

Table 9.37: SIR Intra frequency absolute accuracy

Parameter	Unit	Accuracy [dB]	Conditions
			Range
SIR	dB	± 3	For 0<SIR<20 dB when Iob > -105 dBm/3.84MHz
SIR	dB	+/-(3 - SIR)	For -7<SIR<0 dB when Iob > -105 dBm/3.84MHz

9.2.1.4.1.2 1.28 Mcps TDD Option

Table 9.37A: SIR Intra frequency absolute accuracy

Parameter	Unit	Accuracy [dB]	Conditions
			Range
SIR	dB	± 3	For 0<SIR<20 dB when Iob > -105 dBm/1.28MHz
SIR	dB	+/-(3 - SIR)	For -7<SIR<0 dB when Iob > -105 dBm/1.28MHz

9.2.1.4.1.3 7.68 Mcps TDD Option

Table 9.37B: SIR Intra frequency absolute accuracy

Parameter	Unit	Accuracy [dB]	Conditions
			Range
SIR	dB	± 3	For 0<SIR<20 dB when Iob > -105 dBm/7.68MHz
SIR	dB	+/-(3 - SIR)	For -7<SIR<0 dB when Iob > -105 dBm/7.68MHz

9.2.1.4.2 Range/mapping

The reporting range for *SIR* is from -11 ... 20 dB.

In table 9.38 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.38

Reported value	Measured quantity value	Unit
UTRAN_SIR_00	SIR < -11,0	dB
UTRAN_SIR_01	-11,0 ≤ SIR < -10,5	dB
UTRAN_SIR_02	-10,5 ≤ SIR < -10,0	dB
…	…	…
UTRAN_SIR_61	19,0 ≤ SIR < 19,5	dB
UTRAN_SIR_62	19,5 ≤ SIR < 20,0	dB
UTRAN_SIR_63	20,0 ≤ SIR	dB

9.2.1.5 Transport Channel BER

The measurement period shall be equal to the TTI of the transport channel. Each reported Transport channel BER measurement shall be an estimate of the BER averaged over one measurement period only.

9.2.1.5.1 Accuracy requirement

The average of consecutive Transport channel BER measurements is required to fulfil the accuracy stated in table9.39 if the total number of erroneous bits during these measurements is at least 500 and the absolute BER value for each of the measurements is within the range given in table9.39.

Table 9.39: Transport channel BER accuracy

Parameter	Unit	Accuracy [% of the absolute BER value]	Conditions
			Range
TrpBER	-	+/- 10	Convolutional coding 1/3rd with any amount of repetition or a maximum of 25% puncturing: for absolute BER value ≤ 15% Convolutional coding 1/2 with any amount of repetition or no puncturing: for absolute BER value ≤ 15% Turbo coding 1/3rd with any amount of repetition or a maximum of 20% puncturing: for absolute BER value ≤ 15%.

9.2.1.5.2 Range/mapping

The *Transport channel BER* reporting range is from 0 to 1.

In table 9.40 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.40

Reported value	Measured quantity value	Unit
TrCh_BER_LOG_000	Transport channel BER = 0	-
TrCh_BER_LOG_001	-∞ < Log10(Transport channel BER) < -2,06375	-
TrCh_BER_LOG_002	-2,06375≤ Log10(Transport channel BER) < -2,055625	-
TrCh_BER_LOG_003	-2,055625 ≤ Log10(Transport channel BER) < -2,0475	-
…	…	…
TrCh_BER_LOG_253	-0,024375 ≤ Log10(Transport channel BER) < -0,01625	-
TrCh_BER_LOG_254	-0,01625 ≤ Log10(Transport channel BER) < -0,008125	-
TrCh_BER_LOG_255	-0,008125 ≤ Log10(Transport channel BER) ≤ 0	-

9.2.1.6 RX Timing Deviation

The measurement period shall be 100 ms.

9.2.1.6.1 Accuracy requirements

9.2.1.6.1.1 3.84 Mcps TDD option

Table 9.41: RX Timing Deviation accuracy

Parameter	Unit	Accuracy [chip]	Conditions
			Range [chips]
RX Timing Deviation	chip	+/- 0,5	-1024, …, 1024

9.2.1.6.1.2 1.28 Mcps TDD option

Table 9.41A: RX Timing Deviation accuracy

Parameter	Unit	Accuracy [chip]	Conditions
			Range [chips]
RX Timing Deviation	chip	+/- 0.125	-16, ..., 16

9.2.1.6.1.3 7.68 Mcps TDD option

Table 9.41B: RX Timing Deviation accuracy

Parameter	Unit	Accuracy [chip]	Conditions
			Range [chips]
RX Timing Deviation	chip	+/- 1.0	-2048, …, 2048

9.2.1.6.2 Range/mapping

9.2.1.6.2.1 3.84 Mcps TDD option

The reporting range for *RX Timing Deviation* is from -1023,9375 ... 1023,9375 chips.

In table 9.42 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.42

Reported value	Measured quantity value	Unit
RX_TIME_DEV_0000	RX Timing Deviation < -1023,9375	chip
RX_TIME_DEV_0001	-1023,9375≤ RX Timing Deviation < 1023,875	chip
RX_TIME_DEV_0002	-1023,875≤ RX Timing Deviation < -1023,8125	chip
…	…	…
RX_TIME_DEV_16384	000,00≤ RX Timing Deviation <0,0625	chip
…	…	…
RX_TIME_DEV_32765	1023,8125 ≤ RX Timing Deviation < 1023,875	chip
RX_TIME_DEV_32766	1023,875≤ RX Timing Deviation < 1023,9375	chip
RX_TIME_DEV_32767	1023,9375 ≤ RX Timing Deviation	chip

NOTE: This measurement may be used for timing advance calculation or location services.

9.2.1.6.2.2 1.28 Mcps TDD option

The reporting range for *RX Timing Deviation* is from -16 16 chips.

In table 9.42A mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.42A

Reported value	Measured quantity value	Unit
RX_TIME_DEV_000	RX Timing Deviation < -15,9375	chip
RX_TIME_DEV_001	-15,9375 ≤ RX Timing Deviation < -15,875	chip
RX_TIME_DEV_002	-15,875 ≤ RX Timing Deviation < -15,8125	chip
…	…	…
RX_TIME_DEV_509	15,8125 ≤ RX Timing Deviation < 15,875	chip
RX_TIME_DEV_510	15,875 ≤ RX Timing Deviation < 15,9375	chip
RX_TIME_DEV_511	15,9375 ≤ RX Timing Deviation	chip

NOTE: This measurement can be used for timing advance (synchronisation shift) calculation for uplink synchronisation or location services.

9.2.1.6.2.3 7.68 Mcps TDD option

The reporting range for *RX Timing Deviation* is from -2047,9375 ... 2047,9375 chips.

In Table 9.42B mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.42B

Reported value	Measured quantity value	Unit
RX_TIME_DEV_0000	RX Timing Deviation < -2047,9375	chip
RX_TIME_DEV_0001	-2047,9375 ≤ RX Timing Deviation < -2047,875	chip
RX_TIME_DEV_0002	-2047,875 ≤ RX Timing Deviation < -2047,8125	chip
…	…	…
RX_TIME_DEV_32768	000,00 ≤ RX Timing Deviation <0,0625	chip
…	…	…
RX_TIME_DEV_65533	2047,8125 ≤ RX Timing Deviation < 2047,875	chip
RX_TIME_DEV_65534	2047,875 ≤ RX Timing Deviation < 2047,9375	chip
RX_TIME_DEV_65535	2047,9375 ≤ RX Timing Deviation	chip

NOTE: This measurement may be used for timing advance calculation or location services.

9.2.1.7 (void)

9.2.1.8 (void)

9.2.1.9 UTRAN GPS Timing of Cell Frames for UP

NOTE: This measurement is used for UP purposes.

The measurement period shall be [1] second.

9.2.1.9.1 Accuracy requirement

9.2.1.9.1.1 3.84 Mcps TDD Option

Three accuracy classes are defined for the UTRAN GPS Timing of Cell Frames for UP measurement, i.e. accuracy class A, B and C. The implemented accuracy class depends on the UP methods that are supported.

Table 9.43

Parameter	Unit	Accuracy [chip]	Conditions
UTRAN GPS timing of Cell Frames for UP	chip	Accuracy Class A: +/- [20000] chip Accuracy Class B: +/- [20] chip Accuracy Class C: +/- [X] chip	Over the full range

9.2.1.9.1.2 1.28 Mcps TDD Option

Three accuracy classes are defined for the UTRAN GPS Timing of Cell Frames for UP measurement, i.e. accuracy class A, B and C. The implemented accuracy class depends on the UP methods that are supported.

Table 9.43A

Parameter	Unit	Accuracy [chip]	Conditions
UTRAN GPS timing of Cell Frames for UP	chip	Accuracy Class A: +/- [5000] chip Accuracy Class B: +/- [5] chip Accuracy Class C: +/- [X] chip	Over the full range

9.2.1.9.1.3 7.68 Mcps TDD Option

Three accuracy classes are defined for the UTRAN GPS Timing of Cell Frames for UP measurement, i.e. accuracy class A, B and C. The implemented accuracy class depends on the UP methods that are supported.

Table 9.43B

Parameter	Unit	Accuracy [chip]	Conditions
UTRAN GPS timing of Cell Frames for UP	chip	Accuracy Class A: +/- [40000] chip Accuracy Class B: +/- [40] chip Accuracy Class C: +/- [X] chip	Over the full range

9.2.1.9.2 Range/mapping

9.2.1.9.2.1 3.84 Mcps TDD Option

The reporting range for *UTRAN GPS timing of Cell Frames for UP* is from 0 ... 2322432000000 chip.

In table 9.44 the mapping of measured quantity is defined.

Table 9.44

Reported value	Measured quantity value	Unit
GPS_TIME_00000000000000	UTRAN GPS timing of Cell Frames for UP < 0,0625	chip
GPS_TIME_00000000000001	0,0625 ≤ UTRAN GPS timing of Cell Frames for UP < 0,1250	chip
GPS_TIME_00000000000002	0,1250 ≤ UTRAN GPS timing of Cell Frames for UP < 0,1875	chip
…	…	…
GPS_TIME_37158911999997	2322431999999,8125 ≤ UTRAN GPS timing of Cell Frames for UP < 2322431999999,8750	chip
GPS_TIME_37158911999998	2322431999999,8750 ≤ UTRAN GPS timing of Cell Frames for UP < 2322431999999,9375	chip
GPS_TIME_37158911999999	2322431999999,9375 ≤ UTRAN GPS timing of Cell Frames for UP < 2322432000000,0000	chip

9.2.1.9.2.2 1.28 Mcps TDD Option

The reporting range for *UTRAN GPS timing of Cell Frames for UP* is from 0 ... 774144000000 chip.

In table 9.44A mapping of the measured quantity is defined.

Table 9.44A

Reported value	Measured quantity value	Unit
GPS_TIME_0000000000000	UTRAN GPS timing of Cell Frames for UP < 0,25	chip
GPS_TIME_0000000000001	0,25 ≤ UTRAN GPS timing of Cell Frames for UP < 0,50	chip
GPS_TIME_0000000000002	0,50 ≤ UTRAN GPS timing of Cell Frames for UP < 0,75	chip
...	...	...
GPS_TIME_3096575999997	774143999999,25 ≤ UTRAN GPS timing of Cell Frames for UP < 774143999999,50	chip
GPS_TIME_3096575999998	774143999999,50 ≤ UTRAN GPS timing of Cell Frames for UP <774143999999,75	chip
GPS_TIME_3096575999999	774143999999,75 ≤ UTRAN GPS timing of Cell Frames for UP < 774144000000,00	chip

9.2.1.9.2.3 7.68 Mcps TDD Option

The reporting range for *UTRAN GPS timing of Cell Frames for UP* is from 0 ... 4644864000000 chip.

In table 9.44B the mapping of measured quantity is defined.

Table 9.44B

Reported value	Measured quantity value	Unit
GPS_TIME_00000000000000	UTRAN GPS timing of Cell Frames for UP < 0,125	chip
GPS_TIME_00000000000001	0,125 ≤ UTRAN GPS timing of Cell Frames for UP < 0, 250	chip
GPS_TIME_00000000000002	0,250 ≤ UTRAN GPS timing of Cell Frames for UP < 0,375	chip
…	…	…
GPS_TIME_37158911999997	4644863999999,625 ≤ UTRAN GPS timing of Cell Frames for UP < 4644863999999,750	chip
GPS_TIME_37158911999998	4644863999999,750 ≤ UTRAN GPS timing of Cell Frames for UP < 4644863999999,875	chip
GPS_TIME_37158911999999	4644863999999,875 ≤ UTRAN GPS timing of Cell Frames for UP < 4644864000000,0000	chip

9.2.1.10 SYNC-UL Timing Deviation for 1.28 Mcps

This measurement refers to TS25.225 subsection 5.2.8.1.

9.2.1.10.1 Accuracy requirements

Table 9.44AA

Parameter	Unit	Accuracy [chip]	Conditions
			Range [chips]
SYNC-UL Timing Deviation	chip	+/- 0.125	0, …, 1023.875

9.2.1.10.2 Range/mapping

The reporting range for *SYNC-UL Timing Deviation* is from 0 ... 1023.875 chips.

In table 9.44B the mapping of the measured quantity is defined. Signaling range may be larger than the guaranteed accuracy range.

Table 9.44B

Reported value	Measured quantity value	Unit
SYNC_UL_TIME_DEV_0000	**SYNC-UL** Timing Deviation < 0.125	chip
SYNC_UL_TIME_DEV_0001	0.125 ≤ **SYNC-UL** Timing Deviation < 0.25	chip
…	…	…
SYNC_UL_TIME_DEV_1023	127.875 ≤ **SYNC-UL** Timing Deviation < 128	chip
…	…	…
SYNC_UL_TIME_DEV_8189	1023.625 ≤ **SYNC-UL** Timing Deviation < 1023.75	chip
SYNC_UL_TIME_DEV_8190	1023.75 ≤ **SYNC-UL** Timing Deviation <1023.875	chip
SYNC_UL_TIME_DEV_8191	1023.875 < ≤ **SYNC-UL** Timing Deviation	chip

NOTE: This measurement can be used for timing advance (synchronisation shift) calculation for uplink synchronisation or location services.

9.2.1.11 Node B Synchronisation for 3.84 Mcps

Cell synchronisation burst timing is the time of start (defined by the first detected path in time) of the cell sync burst of a neighbouring cell. Type 1 is used for the initial phase of Node B synchronization. Type 2 is used for the steady-state phase of Node B synchronization. Both have different range.

The reference point for the cell sync burst timing measurement shall be the Rx antenna connector.

9.2.1.11.1 Cell Synchronisation burst timing Type1 and Type 2

Table 9.44C

Parameter	Unit	Accuracy [chip]	Conditions
Cell Synchronisation burst timing	chip	[+/-0,5 for both type 1 and type 2]	

9.2.1.11.2 Range/mapping Type 1

The reporting range for Cell Synchronisation burst timing type 1 is from -131072 to +131072 chips with 1/4 chip resolution.

In table 9.44D the mapping of measured quantity is defined for burst type 1.

Table 9.44D

Reported value	Measured quantity value	Unit
Burst_TIME__TYPE1_0000000	-131072 ≤ burst timing Type 1< -131071.75	chip
Burst_TIME__TYPE1_0000001	-131071.75 ≤ burst timing Type 1< -131071.5	chip
Burst_TIME__TYPE1_0000002	-131071.5 ≤ burst timing Type 1< -131071.25	chip
…	…	…
Burst_TIME__TYPE1_1048573	131071.25 ≤ burst timing Type 1< 131071.5	chip
Burst_TIME__TYPE1_1048574	131071.5 ≤ burst timing Type 1< 131071.75	chip
Burst_TIME__TYPE1_1048575	131071.75 ≤ burst timing Type 1< 131072	chip

9.2.1.11.3 Range/mapping Type 2

The reporting range for Cell Synchronisation burst timing type 2 is from -16 to +16 chips with 1/8 chip resolution. In table 9.44E the mapping of measured quantity is defined for burst type 2.

Table 9.44E

Reported value	Measured quantity value	Unit
Burst_TIME__TYPE2_0000	-16 ≤ burst timing Type 2< -15.875	chip
Burst_TIME__TYPE2_0001	-15.875 ≤ burst timing Type 2< -15.750	chip
Burst_TIME__TYPE2_0002	-15.750 ≤ burst timing Type 2< -15.625	chip
…	…	…
Burst_TIME__TYPE2_0253	15.625 ≤ burst timing Type 2< 15.750	chip
Burst_TIME__TYPE2_0254	15.750 ≤ burst timing Type 2< 15.875	chip
Burst_TIME__TYPE2_0255	15.875 ≤ burst timing Type 2< 16	chip

9.2.1.11.4 Cell Synchronisation burst SIR Type1 and Type2

Signal to Interference Ratio for the cell sync burst, defined according to TS25.225.

The reference point for the cell synchronisation burst SIR shall be the Rx antenna connector.

Table 9.44F

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	
Cell Synchronisation burst SIR	dB	±3 dB for both type 1 and 2	[]	

9.2.1.11.5 Range/Mapping for Type1 and Type 2

The reporting range for *SIR* is from 0 ... 60 dB with a resolution of 2dB.

In table 9.44H mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.44H

Reported value	Measured quantity value	Unit
Cell_Synch_Burst_SIR_00	SIR< 0	dB
Cell_Synch_Burst_SIR_01	0 ≤ SIR< 2	dB
Cell_Synch_Burst_SIR_02	2 ≤ SIR< 4	dB
…	…	…
Cell_Synch_Burst_SIR_29	56≤ SIR< 58	dB
Cell_Synch_Burst_SIR_30	58 ≤ SIR< 60	dB
Cell_Synch_Burst_SIR_31	60 ≤ SIR	dB

9.2.1.11B Node B Synchronisation for 1.28Mcps TDD

Cell synchronisation burst timing is the time of start (defined by the first detected path in time) of the cell sync burst of a neighbouring cell. Type 1 is used for the initial phase of Node B synchronisation. Type 2 is used for the steady-state phase of Node B synchronisation. Both have different range.

The reference point for the cell sync burst timing measurement shall be the Rx antenna connector.

9.2.1.11B.1 Cell Synchronisation burst timing Type1 and Type 2

Table 9.44HA

Parameter	Unit	Accuracy [chip]	Conditions
Cell Synchronisation burst timing	chip	[+/-0.125 for both type 1 and type 2]	

9.2.1.11B.2 Range/mapping Type 1

The reporting range for Cell Synchronisation burst timing type 1 is from -65536 to +65536 chips with 1/4 chip resolution.

In table 9.44HB the mapping of measured quantity is defined for burst type 1.

Table 9.44HB

Reported value	Measured quantity value	Unit
Burst_TIME__TYPE1_0000000	-65536 ≤ burst timing Type 1< -65535.75	chip
Burst_TIME__TYPE1_0000001	-65535.75 ≤ burst timing Type 1< -65535.5	chip
Burst_TIME__TYPE1_0000002	-65535.5 ≤ burst timing Type 1< -65535.25	chip
…	…	…
Burst_TIME__TYPE1_0524285	65535.25 ≤ burst timing Type 1< 65535.5	chip
Burst_TIME__TYPE1_0524286	65535.5 ≤ burst timing Type 1< 65535.75	chip
Burst_TIME__TYPE1_0524287	65535.75 ≤ burst timing Type 1< 65536	chip

9.2.1.11B.3 Range/mapping Type 2

The reporting range for Cell Synchronisation burst timing type 2 is from -8 to +8 chips with 1/8 chip resolution. In table 9.44HC the mapping of measured quantity is defined for burst type 2.

Table 9.44HC

Reported value	Measured quantity value	Unit
Burst_TIME__TYPE2_0000	-8 ≤ burst timing Type 2< -7.875	chip
Burst_TIME__TYPE2_0001	-7.875 ≤ burst timing Type 2< -7.750	chip
Burst_TIME__TYPE2_0002	-7.750 ≤ burst timing Type 2< -7.625	chip
…	…	…
Burst_TIME__TYPE2_0125	7.625 ≤ burst timing Type 2< 7.750	chip
Burst_TIME__TYPE2_0126	7.750 ≤ burst timing Type 2< 7.875	chip
Burst_TIME__TYPE2_0127	7.875 ≤ burst timing Type 2< 8	chip

9.2.1.11B.4 Cell Synchronisation burst SIR Type1 and Type2

Signal to Interference Ratio for the cell sync burst, defined according to TS25.225.

The reference point for the cell synchronisation burst SIR shall be the Rx antenna connector.

Table 9.44HD

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	
Cell Synchronisation burst SIR	dB	±3 dB for both type 1 and 2	[]	

9.2.1.11B.5 Range/Mapping for Type1 and Type 2

The reporting range for SIR is from 0 ... 30 dB with a resolution of 1dB.

In table 9.44HE mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.44HE

Reported value	Measured quantity value	Unit
Cell_Sync_Burst_SIR_00	SIR< 0	dB
Cell_Sync_Burst_SIR_01	0 ≤ SIR< 1	dB
Cell_Sync_Burst_SIR_02	1 ≤ SIR< 2	dB
…	…	…
Cell_Sync_Burst_SIR_29	28≤ SIR< 29	dB
Cell_Sync_Burst_SIR_30	29 ≤ SIR< 30	dB
Cell_Sync_Burst_SIR_31	30 ≤ SIR	dB

9.2.1.11C Node B Synchronisation for 7.68 Mcps

Cell synchronisation burst timing is the time of start (defined by the first detected path in time) of the cell sync burst of a neighbouring cell. Type 1 is used for the initial phase of Node B synchronization. Type 2 is used for the steady-state phase of Node B synchronization. Both have different range.

The reference point for the cell sync burst timing measurement shall be the Rx antenna connector.

9.2.1.11C.1 Cell Synchronisation burst timing Type1 and Type 2

Table 9.44HF

Parameter	Unit	Accuracy [chip]	Conditions
Cell Synchronisation burst timing	chip	[+/-1 for both type 1 and type 2]	

9.2.1.11C.2 Range/mapping Type 1

The reporting range for Cell Synchronisation burst timing type 1 is from -262144 to +262144 chips with 1/2 chip resolution.

In table 9.44HG the mapping of measured quantity is defined for burst type 1.

Table 9.44HG

Reported value	Measured quantity value	Unit
Burst_TIME__TYPE1_0000000	-262144 ≤ burst timing Type 1< -262143.5	chip
Burst_TIME__TYPE1_0000001	-262143.5 ≤ burst timing Type 1< -262143	chip
Burst_TIME__TYPE1_0000002	-262143 ≤ burst timing Type 1< -262142.5	chip
…	…	…
Burst_TIME__TYPE1_1048573	262142.5 ≤ burst timing Type 1< 262143	chip
Burst_TIME__TYPE1_1048574	262143 ≤ burst timing Type 1< 262143.5	chip
Burst_TIME__TYPE1_1048575	262143.5 ≤ burst timing Type 1< 262144	chip

9.2.1.11C.3 Range/mapping Type 2

The reporting range for Cell Synchronisation burst timing type 2 is from -32 to +32 chips with 1/4 chip resolution. In table 9.44HH the mapping of measured quantity is defined for burst type 2.

Table 9.44HH

Reported value	Measured quantity value	Unit
Burst_TIME__TYPE2_0000	-32 ≤ burst timing Type 2< -31.75	chip
Burst_TIME__TYPE2_0001	-31.75 ≤ burst timing Type 2< -31.5	chip
Burst_TIME__TYPE2_0002	-31.5 ≤ burst timing Type 2< -31.25	chip
…	…	…
Burst_TIME__TYPE2_0253	31.25 ≤ burst timing Type 2< 31.5	chip
Burst_TIME__TYPE2_0254	31.5 ≤ burst timing Type 2< 31.75	chip
Burst_TIME__TYPE2_0255	31.75 ≤ burst timing Type 2< 32	chip

9.2.1.11C.4 Cell Synchronisation burst SIR Type1 and Type2

Signal to Interference Ratio for the cell sync burst, defined according to TS25.225.

The reference point for the cell synchronisation burst SIR shall be the Rx antenna connector.

Table 9.44HI

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	
Cell Synchronisation burst SIR	dB	±3 dB for both type 1 and 2	[]	

9.2.1.11C.5 Range/Mapping for Type1 and Type 2

The reporting range for *SIR* is from 0 ... 60 dB with a resolution of 2dB.

In table 9.44HJ mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.44HJ

Reported value	Measured quantity value	Unit
Cell_Synch_Burst_SIR_00	SIR< 0	dB
Cell_Synch_Burst_SIR_01	0 ≤ SIR< 2	dB
Cell_Synch_Burst_SIR_02	2 ≤ SIR< 4	dB
…	…	…
Cell_Synch_Burst_SIR_29	56≤ SIR< 58	dB
Cell_Synch_Burst_SIR_30	58 ≤ SIR< 60	dB
Cell_Synch_Burst_SIR_31	60 ≤ SIR	dB

9.2.1.12 SFN-SFN observed time difference

The measurement period shall be 100 ms.

9.2.1.12.1 Accuracy requirements

9.2.1.12.1.1 3.84 Mcps TDD option

Table 9.44I: SFN-SFN observed time difference accuracy

Parameter	Unit	Accuracy [chip]	Conditions
			Range [chips]
SFN-SFN observed time difference	chip	+/-0,5	-1280 ... +1280

9.2.1.12.1.2 1.28 Mcps TDD option

Table 9.44J: SFN-SFN observed time difference accuracy

Parameter	Unit	Accuracy [chip]	Conditions
			Range [chips]
SFN-SFN observed time difference	chip	+/- 0.125	-432 ... +432

9.2.1.12.1.3 7.68 Mcps TDD option

Table 9.44JA: SFN-SFN observed time difference accuracy

Parameter	Unit	Accuracy [chip]	Conditions
			Range [chips]
SFN-SFN observed time difference	chip	+/-1.0	-2560 ... +2560

9.2.1.12.2 Range/mapping

9.2.1.12.2.1 3.84 Mcps TDD option

The reporting range for *SFN-SFN observed time difference* is from -1280 ... +1280 chip.

In table 9.44K mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.44K

Reported value	Measured quantity value	Unit
SFN-SFN_TIME _00000	SFN-SFN observed time difference < -1280,0000	chip
SFN-SFN_TIME _00001	-1280,0000 ≤ SFN-SFN observed time difference < -1279,9375	chip
SFN-SFN_TIME _00002	-1279,9375 ≤ SFN-SFN observed time difference < -1279,8750	chip
…	…	…
SFN-SFN_TIME _40959	1279,8750 ≤ SFN-SFN observed time difference < 1279,9375	chip
SFN-SFN_TIME _40960	1279,9375 ≤ SFN-SFN observed time difference < 1280,0000	chip
SFN-SFN_TIME _40961	1280,0000 ≤ SFN-SFN observed time difference	chip

9.2.1.12.2.2 1.28 Mcps TDD option

The reporting range for *SFN-SFN observed time difference* is from -432 ... +432 chip.

In table 9.44L mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.44L

Reported value	Measured quantity value	Unit
SFN-SFN_TIME _00000	SFN-SFN observed time difference < -432,00000	chip
SFN-SFN_TIME _00001	-432,00000 ≤ SFN-SFN observed time difference < -431,96875	chip
SFN-SFN_TIME _00002	-431,96875 ≤ SFN-SFN observed time difference < -431,9375	chip
…	…	…
SFN-SFN_TIME _27647	431,9375 ≤ SFN-SFN observed time difference < 431,96875	chip
SFN-SFN_TIME _27648	431,96875 ≤ SFN-SFN observed time difference < 432,00000	chip
SFN-SFN_TIME _27649	432,00000 ≤ SFN-SFN observed time difference	chip

9.2.1.12.2.3 7.68 Mcps TDD option

The reporting range for *SFN-SFN observed time difference* is from -2560 ... +2560 chip.

In Table 9.44LA mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.44LA

Reported value	Measured quantity value	Unit
SFN-SFN_TIME _00000	SFN-SFN observed time difference < -2560,0000	chip
SFN-SFN_TIME _00001	-2560,0000 ≤ SFN-SFN observed time difference < -2559,8750	chip
SFN-SFN_TIME _00002	-2559,8750 ≤ SFN-SFN observed time difference < -2559,7500	chip
…	…	…
SFN-SFN_TIME _40959	2559,7500 ≤ SFN-SFN observed time difference < 2559,8750	chip
SFN-SFN_TIME _40960	2559,8750 ≤ SFN-SFN observed time difference < 2560,0000	chip
SFN-SFN_TIME _40961	2560,0000 ≤ SFN-SFN observed time difference	chip

9.2.1.13 AOA measurement for UE positioning for 1.28Mcps TDD option

AOA defines the angle of arrival of the signals from a user at the antenna. The reference direction for this measurement shall be the North. The measurement period shall be 200ms.

9.2.1.13.1 Accuracy requirements

Eight accuracy classes are defined for UTRAN AOA measurement, i.e. accuracy class A to H.

Table 9.44M

Parameter	Unit	Accuracy [degree]	Conditions
UTRAN AOA measurement for UE positioning	degree	Accuracy Class A: +/- 180 degree Accuracy Class B: +/- 90 degree Accuracy Class C: +/- 60 degree Accuracy Class D: +/- 20 degree Accuracy Class E: +/- 10 degree Accuracy Class F: +/- 5 degree Accuracy Class G: +/- 2 degree Accuracy Class H: +/- 1 degree	Over the full range

9.2.1.13.2 Range/mapping

The reporting range for AOA measurement is from 0 ... 360 degree.

The mapping of the measured quantity is defined in table 9.44N.

Table 9.44N

Reported value	Measured quantity value	Unit
AOA_ANGLE _000	0 ≤ AOA_ANGLE < 0,5	degree
AOA_ANGLE _001	0,5 ≤ AOA_ANGLE < 1	degree
AOA_ANGLE _002	1 ≤ AOA_ANGLE < 1,5	degree
…	…	…
AOA_ANGLE _717	358,5 ≤ AOA_ANGLE < 359	degree
AOA_ANGLE _718	359 ≤ AOA_ANGLE < 359,5	degree
AOA_ANGLE _719	359,5 ≤ AOA_ANGLE < 360	degree

9.2.1.14 HS-SICH reception quality

The measurement period shall be 200 ms

9.2.1.14.1 Range/mapping

9.2.1.14.1.1 3.84 Mcps TDD and 7.68 Mcps TDD

The *HS-SICH reception quality* reporting range is from 0…20 reception indications.

The mappings of the measured quantities are defined in tables 9.44O, 9.44P and 9.44Q.

Table 9.44O

Reported value	Measured quantity value	Unit
FAILED_HS_SICH_00	Failed HS-SICH receptions = 0	-
FAILED_HS_SICH_01	Failed HS-SICH receptions = 1	-
FAILED_HS_SICH_02	Failed HS-SICH receptions = 2	-
…	…	…
FAILED_HS_SICH_17	Failed HS-SICH receptions = 17	-
FAILED_HS_SICH_18	Failed HS-SICH receptions = 18	-
FAILED_HS_SICH_19	Failed HS-SICH receptions = 19	-
FAILED_HS_SICH_20	Failed HS-SICH receptions = 20	-

Table 9.44P

Reported value	Measured quantity value	Unit
MISSED_HS_SICH_00	Missed HS-SICH receptions = 0	-
MISSED_HS_SICH_01	Missed HS-SICH receptions = 1	-
MISSED_HS_SICH_02	Missed HS-SICH receptions = 2	-
…	…	…
MISSED_HS_SICH_17	Missed HS-SICH receptions = 17	-
MISSED_HS_SICH_18	Missed HS-SICH receptions = 18	-
MISSED_HS_SICH_19	Missed HS-SICH receptions = 19	-
MISSED_HS_SICH_20	Missed HS-SICH receptions = 20	-

Table 9.44Q

Reported value	Measured quantity value	Unit
TOTAL_HS_SICH_00	Expected HS-SICH transmissions = 0	-
TOTAL_HS_SICH_01	Expected HS-SICH transmissions = 1	-
TOTAL_HS_SICH_02	Expected HS-SICH transmissions = 2	-
…	…	…
TOTAL_HS_SICH_17	Expected HS-SICH transmissions = 17	-
TOTAL_HS_SICH_18	Expected HS-SICH transmissions = 18	-
TOTAL_HS_SICH_19	Expected HS-SICH transmissions = 19	-
TOTAL_HS_SICH_20	Expected HS-SICH transmissions = 20	-

9.2.1.14.1.2 1.28 Mcps TDD

The *HS-SICH reception quality* reporting range is from 0…40 reception indications.

The mappings of the measured quantities are defined in tables 9.44O, 9.44P and 9.44Q.

Table 9.44O-1

Reported value	Measured quantity value	Unit
FAILED_HS_SICH_00	Failed HS-SICH receptions = 0	-
FAILED_HS_SICH_01	Failed HS-SICH receptions = 1	-
FAILED_HS_SICH_02	Failed HS-SICH receptions = 2	-
…	…	…
FAILED_HS_SICH_37	Failed HS-SICH receptions = 37	-
FAILED_HS_SICH_38	Failed HS-SICH receptions = 38	-
FAILED_HS_SICH_39	Failed HS-SICH receptions = 39	-
FAILED_HS_SICH_40	Failed HS-SICH receptions = 40	-

Table 9.44P-1

Reported value	Measured quantity value	Unit
MISSED_HS_SICH_00	Missed HS-SICH receptions = 0	-
MISSED_HS_SICH_01	Missed HS-SICH receptions = 1	-
MISSED_HS_SICH_02	Missed HS-SICH receptions = 2	-
…	…	…
MISSED_HS_SICH_37	Missed HS-SICH receptions = 37	-
MISSED_HS_SICH_38	Missed HS-SICH receptions = 38	-
MISSED_HS_SICH_39	Missed HS-SICH receptions = 39	-
MISSED_HS_SICH_40	Missed HS-SICH receptions = 40	-

Table 9.44Q-1

Reported value	Measured quantity value	Unit
TOTAL_HS_SICH_00	Expected HS-SICH transmissions = 0	-
TOTAL_HS_SICH_01	Expected HS-SICH transmissions = 1	-
TOTAL_HS_SICH_02	Expected HS-SICH transmissions = 2	-
…	…	…
TOTAL_HS_SICH_37	Expected HS-SICH transmissions = 37	-
TOTAL_HS_SICH_38	Expected HS-SICH transmissions = 38	-
TOTAL_HS_SICH_39	Expected HS-SICH transmissions = 39	-
TOTAL_HS_SICH_40	Expected HS-SICH transmissions = 40	-

9.2.1.15 UpPTS interference (1.28Mcps TDD)

The measurement period shall be 100 ms.

9.2.1.15.1 Absolute accuracy requirements

Table 9.44R: UpPTS interference Intra frequency absolute accuracy for Wide Area BS

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm/1.28 MHz]
UpPTS interference	dBm	± 6	± 9	-105..-74

Table 9.44S: UpPTS interference Intra frequency absolute accuracy for Local Area BS

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm/1.28 MHz]
UpPTS interference	dBm	± 6	± 9	-91..-60

9.2.1.15.2 Range/mapping

The reporting range for UpPTS interference is from -120...-57 dBm.

In table 9.44T mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.44T

Reported value	Measured quantity value	Unit
UTRAN_UPPTS_LEV_00	UpPTS interference < -120,0	dBm
UTRAN_UPPTS_LEV _01	-120,0 ≤ UpPTS interference < -119,5	dBm
UTRAN_UPPTS_LEV _02	-119,5 ≤ UpPTS interference < -119,0	dBm
…	…	…
UTRAN_UPPTS_LEV _125	-58,0 ≤ UpPTS interference < -57,5	dBm
UTRAN_UPPTS_LEV _126	-57,5 ≤ UpPTS interference < -57,0	dBm
UTRAN_UPPTS_LEV _127	-57,0 ≤ UpPTS interference	dBm

9.2.2 Performance for UTRAN measurements in downlink (TX)

The output power is defined as the average power of the transmit timeslot, and is measured with a filter that has a Root-Raised Cosine (RRC) filter response with a roll off $\alpha = 0,22$ and a bandwidth equal to the chip rate.

9.2.2.1 Transmitted carrier power

The measurement period shall be 100 ms.

9.2.2.1.1 Accuracy requirements

Table 9.45 Transmitted carrier power accuracy

Parameter	Unit	Accuracy [% units]	Conditions
			Range
Transmitted carrier power	%	± 10	For 10% ≤ Transmitted carrier power ≤90%

9.2.2.1.2 Range/mapping

The reporting range for *Transmitted carrier power* is from 0 ... 100 %.

In table 9.46 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.46

Reported value	Measured quantity value	Unit
UTRAN_TX_POWER _000	Transmitted carrier power = 0	%
UTRAN_TX_POWER _001	0 < Transmitted carrier power ≤ 1	%
UTRAN_TX_POWER _002	1 < Transmitted carrier power ≤ 2	%
UTRAN_TX_POWER _003	2 < Transmitted carrier power ≤ 3	%
…	…	…
UTRAN_TX_POWER _098	97 < Transmitted carrier power ≤ 98	%
UTRAN_TX_POWER _099	98 < Transmitted carrier power ≤ 99	%
UTRAN_TX_POWER _100	99 < Transmitted carrier power ≤ 100	%

9.2.2.2 Transmitted code power

The measurement period shall be 100 ms.

9.2.2.2.1 Absolute accuracy requirements

Table 9.47: Transmitted code power absolute accuracy

Parameter	Unit	Accuracy [dB]	Conditions
			Range
Transmitted code power	dBm	± 3	Over the full range

9.2.2.2.2 Relative accuracy requirements

The relative accuracy of transmitted code power is defined as the transmitted code power measured at one dedicated radio link compared to the transmitted code power measured from a different dedicated radio link in the same cell.

Table 9.48: Transmitted code power relative accuracy

Parameter	Unit	Accuracy [dB]	Conditions
			Range
Transmitted code power	dBm	± 2	Over the full range

9.2.2.2.3 Range/mapping

The reporting range for *Transmitted code power* is from -10 ... 46 dBm.

In table 9.49 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.49

Reported value	Measured quantity value	Unit
UTRAN_CODE_POWER _010	-10,0 ≤ Transmitted code power < -9,5	dBm
UTRAN_CODE_POWER _011	-9,5 ≤ Transmitted code power < -9,0	dBm
UTRAN_CODE_POWER _012	-9,0 ≤ Transmitted code power < -8,5	dBm
…	…	…
UTRAN_CODE_POWER _120	45,0 ≤ Transmitted code power < 45,5	dBm
UTRAN_CODE_POWER _121	45,5 ≤ Transmitted code power < 46,0	dBm
UTRAN_CODE_POWER _122	46,0 ≤ Transmitted code power < 46,5	dBm

9.2.2.3 Transmitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission

The measurement period shall be 100 ms.

9.2.2.3.1 Accuracy requirements

Table 9.50: Transmitted carrier power accuracy

Parameter	Unit	Accuracy [% units]	Conditions
			Range
Transmitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission	%	± 10	For 10% ≤ Transmitted carrier power of all codes not used for HS-PDSCH, HS-SCCH E-AGCH or E-HICH, transmission ≤90%

9.2.2.3.2 Range/mapping

The reporting range for *Transmitted carrier power of all codes not used for HS-PDSCH , HS-SCCH, E-AGCH or E-HICH transmission* is from 0 ... 100 %.

In table 9.51 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.51

Reported value	Measured quantity value	Unit
Transmitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission_000	Transmitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission = 0	%
mitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission _001	0 < Transmitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission ≤ 1	%
mitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission _002	1 < Transmitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission ≤ 2	%
mitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission _003	2 < Transmitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission ≤ 3	%
…	…	…
mitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission _098	97 < Transmitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission ≤ 98	%
mitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission _099	98 < Transmitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission ≤ 99	%
mitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission 100	99 < Transmitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission ≤ 100	%

10 FPACH physical layer information field definition (1.28 Mcps TDD)

1.28 Mcps TDD introduces the FPACH (Fast Physical Access CHannel) which carries physical layer information. Two of these information fields are the "received starting position of the UpPCH" (Uplink Pilot CHannel) and the "transmit power level command for the RACH message". Both information fields are directly (received starting position of the

UpPCH) or can be indirectly (transmit power level command for the RACH message) derived from measurements but are no measurements themselves.

10.1 Received starting position of the UpPCH ($UpPCH_{POS}$) (1.28 Mcps TDD)

The received starting position of the UpPCH ($UpPCH_{POS}$) is derectly derived from measurement, it is equivalent to the received SYNC-UL Timing Deviation for 1.28 Mcps. Its accurecy and range/mapping is defined in section 9.2.1.10. The information field value, $UpPCH_{POS}$ -FIELD_LEV_xxxx, is equivalent to the reported value SYNC_UL_TIME_DEV_xxxx.

10.2 Transmit Power Level Command for the RACH message (1.28 Mcps TDD)

10.2.1 Accuracy requirements

Since this is a desired RX power at the node B and this is no measured value and the derivation of this value in the node B is implementation specific, accuracy requirements are not applicable.

10.2.2 Range/mapping

$PRX_{PRACH,des}$ FIELD is given with a resolution of 0.5 dB with the range [-120,-80] dBm.

$PRX_{PRACH,des}$ FIELD shall be transmitted in the FPACH.

Table 10.1

Information field value	Measured quantity value	Unit
$PRX_{PRACH,des}$ FIELD_LEV_00	$PRX_{PRACH,des} < -120$	dBm
$PRX_{PRACH,des}$ FIELD_LEV_01	$-120 \le PRX_{PRACH,des} < -119.5$	dBm
$PRX_{PRACH,des}$ FIELD_LEV_02	$-119.5 \le PRX_{PRACH,des} < -119$	dBm
…	…	…
$PRX_{PRACH,des}$ FIELD_LEV_79	$-81 \le PRX_{PRACH,des} < -80.5$	dBm
$PRX_{PRACH,des}$ FIELD_LEV_80	$-80.5 \le PRX_{PRACH,des} < -80$	dBm
$PRX_{PRACH,des}$ FIELD_LEV_81	$-80 \le PRX_{PRACH,des}$	dBm

Annex A (normative): Test Cases

A.1 Purpose of Annex

This Annex specifies test specific parameters for some of the functional requirements in chapters 4 to 9. The tests provide additional information to how the requirements should be interpreted for the purpose of conformance testing. The tests in this Annex are described such that one functional requirement may be tested in one or several test and one test may verify several requirements. Some requirements may lack a test.

The conformance tests are specified in TS34.122. Statistical interpretation of the requirements is described in Annex A.2.

A.2 Requirement classification for statistical testing

Requirements in this specification are either expressed as absolute requirements with a single value stating the requirement, or expressed as a success rate. There are no provisions for the statistical variations that will occur when the parameter is tested.

Annex A outlines the test in more detail and lists the test parameters needed. The test will result in an outcome of a test variable value for the DUT inside or outside the test limit. Overall, the probability of a "good" DUT being inside the test limit(s) and the probability of a "bad" DUT being outside the test limit(s) should be as high as possible. For this reason, when selecting the test variable and the test limit(s), the statistical nature of the test is accounted for.

The statistical nature depends on the type of requirement. Some have large statistical variations, while others are not statistical in nature at all. When testing a parameter with a statistical nature, a confidence level is set. This establishes the probability that a DUT passing the test actually meets the requirement and determines how many times a test has to be repeated and what the pass and fail criteria are. Those aspects are not covered by TS 25.123. The details of the tests, how many times to run it and how to establish confidence in the tests are described in TS 34.122. This Annex establishes what the test variable is and whether it can be viewed as statistical in nature or not.

A.2.1 Types of requirements in TS 25.123

A.2.1.1 Time and delay requirements on UE higher layer actions

One part of the RRM requirements are delay requirements:

- In idle mode (A.4) there is cell re-selection delay.
- In UTRAN Connected Mode Mobility (A.5) there is measurement reporting delay, handover delay and cell re-selection delay.
- In RRC Connection Control (A.6) there is RRC re-establishment delay. In case of 1,28Mcps TDD option there is also TFC blocking delay.

All have in common that the UE is required to perform an action observable in higher layers (e.g. camp on the correct cell) within a certain time after a specific event (e.g. a new strong pilot arises). The delay time is statistical in nature for several reasons, among others that measurements required by the UE are performed in a fading radio environment.

The variations make a strict limit unsuitable for a test. Instead there is a condition set for a correct action by the UE, e.g. that the UE shall camp on the correct cell within X seconds. Then the rate of correct events as observed during repeated tests shall be at least 90% in case of AWGN propagation condition. How the limit is applied in the test depends on the confidence required, further detailed are in TS 34.122.

A.2.1.2 Measurements of power levels, relative powers and time

A very large number of requirements are on measurements that the UE performs:

- In UTRAN Connected Mode Mobility (A.5) there are measurement reports.
- Measurement performance requirements (A.8) has requirements on all type of measurements.

The accuracy requirements on measurements are expressed in this specification as a fixed limit (e.g. +/-X dB), but the measurement error will have a distribution that is not easily confined in fixed limits. Assuming a Gaussian distribution of the error, the limits will have to be set at +/-3,29σ if the probability of failing a "good DUT" in a single test is to be kept at 0,1%. It is more reasonable to set the limit tighter and test the DUT by counting the rate of measurements that are within he limits, in a way similar to the requirements on delay.

A.2.1.3 Implementation requirements

A few requirements are strict actions the UE should take or capabilities the UE should have, without any allowance for deviations. These requirements are absolute and should be tested as such. Examples are

- "Event triggered report rate" in UTRAN Connected Mode Mobility (A.5)

A.2.1.4 Physical layer timing requirements

All requirements on "Timing Characteristics" (A.7) are absolute limits on timing accuracy.

A.2.1.5 BER and BLER requirements

Some measurement report procedures in "UE Measurement procedures" (A.8) have requirements on DCH BLER. These are tested in the same way as BLER requirements in TS 25.102.

A.3 Reserved for Future Use

NOTE: This section is included in order to make the following section numbering, match the sections in the beginning of this specification.

A.4 Idle Mode

A.4.1 Cell selection

NOTE: This section is included for consistency with numbering with section 4; no test covering requirements exist.

A.4.2 Cell Re-Selection

For each of the re-selection scenarios in section 4.2 a test is proposed.

For TDD/TDD cell reselection two scenarios are considered:

Scenario 1: Single carrier case

Scenario 2: Multi carrier case

A.4.2.1 Scenario 1: Cell re-selection to intra frequency TDD cell

A.4.2.1.1 Test Purpose and Environment

This test is to verify the requirement for the cell re-selection delay in the single carrier case reported in section 4.2.2.

A.4.2.1.1.1 3.84 Mcps TDD option

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.4.1and A.4.2. Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4.1: General test parameters for Cell Re-selection to intra-frequency TDD cell

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-102	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1.28	The value shall be used for all cells in the test.
DRX cycle length		s	1.28	The value shall be used for all cells in the test.
T1		s	15	
T2		s	15	

Table A.4.2: Cell re-selection to intra-frequency TDD cell

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		**0**		**8**		**0**		**8**		**0**		**8**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5	10	10	10	10
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	9	7	9	7	7	9	7	9	-1	-1	-1	-1
PCCPCH RSCP	dBm	-64	-66			-66	-64			-74	-74		
Qoffset1$_{s,n}$	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1,C6:0				C2, C1: 0; C2, C3:0; C2,C4:0 C2, C5: 0; C2,C6:0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5: 0; C3,C6:0			
Qhyst 1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
		Cell 4				**Cell 5**				**Cell 6**			
Timeslot		**0**		**8**		**0**		**8**		**0**		**8**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		15	15	15	15	20	20	20	20	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74		
Qoffset1$_{s,n}$	dB	C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0				C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0			
Qhyst1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
I_{oc}	dBm/ 3,84 MHz	-70											
Propagation Condition		AWGN											

A.4.2.1.1.2 1.28 Mcps TDD option

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.4.1A and A.4.2A. The UE is requested to monitor neighbouring cells on 1 carrier. Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4.1A: General test parameters for Cell Re-selection to intra-frequency TDD cell

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-103	The value shall be used for all cells in the test.
Access Service Class (ASC#0) -- Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1.28	The value shall be used for all cells in the test.
DRX cycle length		s	1.28	The value shall be used for all cells in the test.
T1		s	15	
T2		s	15	

Table A.4.2A: Cell re-selection to intra-frequency TDD cell

Parameter	**Unit**	**Cell 1**				**Cell 2**				**Cell 3**			
Timeslot Number		**0**		**DWPTS**		**0**		**DWPTS**		**0**		**DWPTS**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/Ior	dB			0	0			0	0			0	0
OCNS_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
$\hat{I}_{or}/I_{oc}$	dB	10	7	10	7	7	10	7	10	-1	-1	-1	-1
PCCPCH RSCP	dBm	-63	-66			-66	-63			-74	-74		
$Qoffset1_{s,n}$	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1,C6:0				C2, C1: 0; C2, C3:0; C2,C4:0 C2, C5: 0; C2, C6:0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5: 0; C3, C6:0			
$Qhyst1_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
		Cell 4				**Cell 5**				**Cell 6**			
Timeslot		**0**		**DWPTS**		**0**		**DWPTS**		**0**		**DWPTS**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/Ior	dB			0	0			0	0			0	0
OCNS_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
$\hat{I}_{or}/I_{oc}$	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74		
$Qoffset1_{s,n}$	dB	C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0				C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0			
$Qhyst1_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
I_{oc}	dBm/ 1.28 MHz	-70											
Propagation Condition		AWGN											
Note: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency"s channel number.													

A.4.2.1.1.3 7.68 Mcps TDD option

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.4.1B and A.4.2B. Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4.1B: General test parameters for Cell Re-selection to intra-frequency TDD cell

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-102	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1.28	The value shall be used for all cells in the test.
DRX cycle length		s	1.28	The value shall be used for all cells in the test.
T1		s	15	
T2		s	15	

Table A.4.2B: Cell re-selection to intra-frequency TDD cell

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		**0**		**8**		**0**		**8**		**0**		**8**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5	10	10	10	10
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	9	7	9	7	7	9	7	9	-1	-1	-1	-1
PCCPCH RSCP	dBm	-64	-66			-66	-64			-74	-74		
Qoffset1$_{s,n}$	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1,C6:0				C2, C1: 0; C2, C3:0; C2,C4:0 C2, C5: 0; C2,C6:0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5: 0; C3,C6:0			
Qhyst 1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
		Cell 4				**Cell 5**				**Cell 6**			
Timeslot		**0**		**8**		**0**		**8**		**0**		**8**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		15	15	15	15	20	20	20	20	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74		
Qoffset1$_{s,n}$	dB	C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0				C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0			
Qhyst1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
I_{oc}	dBm/ 7,68 MHz	-70											
Propagation Condition		AWGN											

A.4.2.1.2 Test Requirements

A.4.2.1.2.1 3.84 Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE:

The cell re-selection delay can be expressed as: $T_{evaluateTDD} + T_{SI}$, where:

$T_{evaluateTDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ TDD}$ of 6.4s according to Table 4.1 in section 4.2.2.7.

T_{SI} Maximum repetition rate of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

A.4.2.1.2.2 1.28 Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send SYNCH-UL sequence in the UpPTS for sending the RRC CONNECTION REQUEST to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE:

The cell re-selection delay can be expressed as: $T_{evaluateNTDD} + T_{SI}$, where:

$T_{evaluateNTDD}$: A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ NTDD}$ of 6.4s according to Table 4.1A in section 4.2.

T_{SI}: Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

A.4.2.1.2.3 7.68 Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE:

The cell re-selection delay can be expressed as: $T_{evaluateTDD} + T_{SI}$, where:

$T_{evaluateTDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ TDD}$ of 6.4s according to Table 4.1B in section 4.2.2.7.

T_{SI} Maximum repetition rate of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

A.4.2.2 Scenario 2: Cell re-selection to inter-frequency TDD cell

A.4.2.2.1 Test Purpose and Environment

This test is to verify the requirement for the cell re-selection delay in the multi carrier case reported in section 4.2.2.

A.4.2.2.1.1 3.84 Mcps TDD option

This scenario implies the presence of 2 carriers and 6 cells as given in Table A.4.3 and A.4.4. Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4.3: General test parameters for Cell Re-selection to inter-frequency TDD cell

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-102	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1.28	The value shall be used for all cells in the test.
DRX cycle length		s	1.28	The value shall be used for all cells in the test.
T1		s	30	
T2		s	15	

Table A.4.4: Cell re-selection to iner-frequency TDD cell

Parameter	**Unit**	**Cell 1**				**Cell 2**				**Cell 3**			
Timeslot Number		**0**		**8**		**0**		**8**		**0**		**8**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 2				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5	10	10	10	10
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	6	0	6	0	0	6	0	6	-3	-3	-3	-3
PCCPCH RSCP	dBm	-67	-73			-73	-67			-76	-76		
Qoffset1$_{s,n}$	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1, C6:0				C2, C1: 0; C2, C3:0; C2,C4:0 C2, C5:0; C2, C6:0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5:0; C3, C6:0			
Qhyst1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
Sintersearch	dB	not sent				not sent				not sent			
		Cell 4				**Cell 5**				**Cell 6**			
Timeslot		**0**		**8**		**0**		**8**		**0**		**8**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 2				Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		15	15	15	15	20	20	20	20	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
PCCPCH RSCP	dBm	-76	-76			-76	-76			-76	-76		
Qoffset1$_{s,n}$	dB	C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0				C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0			
Qhyst1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
Sintersearch	dB	not sent				not sent				not sent			
I_{oc}	dBm/3, 84 MHz	-70											
Propagation Condition		AWGN											

A.4.2.2.1.2 1.28 Mcps TDD option

This scenario implies the presence of 2 carriers and 6 cells as given in Table A.4.3A and A.4.4A. The UE is requested to monitor neighbouring cells on 2 carriers. Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4.3A: General test parameters for Cell Re-selection to inter-frequency TDD cell

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-103	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1.28	The value shall be used for all cells in the test.
DRX cycle length		s	1.28	The value shall be used for all cells in the test.
T1		s	30	
T2		s	15	

Table A.4.4A: Cell re-selection to inter-frequency TDD cell

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		0		DWPTS		0		DWPTS		0		DWPTS	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 2				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/Ior	dB			0	0			0	0			0	0
OCNS_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
$\hat{I}_{or}/I_{oc}$	dB	10	4	10	4	4	10	4	10	-1	-1	-1	-1
PCCPCH RSCP	dBm	-63	-69			-69	-63			-74	-74		
$Qoffset1_{s,n}$	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1, C6:0				C2, C1: 0; C2, C3:0; C2,C4:0C2, C5:0; C2, C6:0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5:0; C3, C6:0			
$Qhyst1_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
Sintersearch	dB	not sent				not sent				not sent			
		Cell 4				Cell 5				Cell 6			
Timeslot		0		DWPTS		0		DWPTS		0		DWPTS	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 2				Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/Ior	dB			0	0			0	0			0	0
OCNS_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
$\hat{I}_{or}/I_{oc}$	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74		
$Qoffset1_{s,n}$	dB	C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0				C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0			
$Qhyst1_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
Sintersearch	dB	not sent				not sent				not sent			
I_{oc}	dBm/ 1.28 MHz	-70											
Propagation Condition		AWGN											
NOTE: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency"s channel number.													

A.4.2.2.1.3 7.68 Mcps TDD option

This scenario implies the presence of 2 carriers and 6 cells as given in Table A.4.3B and A.4.4B. Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4.3B: General test parameters for Cell Re-selection to intra-frequency TDD cell

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-102	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1.28	The value shall be used for all cells in the test.
DRX cycle length		s	1.28	The value shall be used for all cells in the test.
T1		s	30	
T2		s	15	

Table A.4.4B: Cell re-selection to inter-frequency TDD cell

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 2				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5	10	10	10	10
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	6	0	6	0	0	6	0	6	-3	-3	-3	-3
PCCPCH RSCP	dBm	-67	-73			-73	-67			-76	-76		
Qoffset1$_{s,n}$	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1, C6:0				C2, C1: 0; C2, C3:0; C2,C4:0 C2, C5:0; C2, C6:0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5:0; C3, C6:0			
Qhyst1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
Sintersearch	dB	not sent				not sent				not sent			
		Cell 4				Cell 5				Cell 6			
Timeslot		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 2				Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		15	15	15	15	20	20	20	20	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
PCCPCH RSCP	dBm	-76	-76			-76	-76			-76	-76		
Qoffset1$_{s,n}$	dB	C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0				C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0			
Qhyst1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
Sintersearch	dB	not sent				not sent				not sent			
I_{oc}	dBm/7, 68 MHz	-70											
Propagation Condition		AWGN											

A.4.2.2.2 Test Requirements

A.4.2.2.2.1 3.84 Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE:

The cell re-selection delay can be expressed as: $T_{evaluateTDD} + T_{SI}$, where:

$T_{evaluateTDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ TDD}$ of 6.4s according to Table 4.1 in section 4.2.2.7.

T_{SI} Maximum repetition rate of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

A.4.2.2.2.2 1.28 Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the SYNCH-UL sequence in the UpPTS for sending the RRC CONNECTION REQUEST to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE:

The cell re-selection delay can be expressed as: $T_{evaluateNTDD} + T_{SI}$, where:

$T_{evaluateNTDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ NTDD}$ of 6.4s according to Table 4.1A in section 4.2.

T_{SI} Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

A.4.2.2.2.3 7.68 Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE:

The cell re-selection delay can be expressed as: $T_{evaluateTDD} + T_{SI}$, where:

$T_{evaluateTDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ TDD}$ of 6.4s according to Table 4.1B in section 4.2.2.7.

T_{SI} Maximum repetition rate of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

A.4.2.2A Scenario 2A: 3.84 Mcps TDD cell re-selection for 1.28 Mcps TDD UE

A.4.2.2A.1 Test Purpose and Environment

This test is to verify the requirement for the 1.28 Mcps TDD OPTION/3.84 Mcps TDD OPTION cell re-selection delay reported in section 4.2.

This scenario implies the presence of 1 low chip rate (1.28 Mcps TDD OPTION) and 1 high chip rate (3.84 Mcps TDD OPTION)) cell as given in Table A.4.3B and A.4.4B.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304.

Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4.3B: General test parameters for TDD low chip rate to TDD high chip rate cell re-selection

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	1.28 Mcps TDD OPTION cell
	Neighbour cell		Cell2	3.84 Mcps TDD OPTION cell
Final condition	Active cell		Cell2	3.84 Mcps TDD OPTION cell
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1,28	The value shall be used for all cells in the test.
DRX cycle length		s	1,28	The value shall be used for all cells in the test.
T1		s	30	
T2		s	15	

Table A.4.4B: Test parameters for TDD low chip rate to TDD high chip rate cell re-selection

Parameter	Unit	Cell 1				Cell 2			
Timeslot Number		0		DwPTS		0		8	
		T1	T2	T 1	T 2	T1	T2	T 1	T 2
UTRA RF Channel Number (NOTE)		Channel 1				Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3		
DwPCH_Ec/Ior	dB			0	0	n.a.		n.a.	
SCH_Ec/Ior	dB	n.a.		n.a.		-9	-9	-9	-9
SCH_t_{offset}		n.a.		n.a.		0	0	0	0
PICH_Ec/Ior	dB							-3	-3
OCNS_Ec/Ior	dB	-3		n.a.		-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	10	7			7	10	7	10
I_{oc}		-70 dBm/ 1.28 MHz				-70 dBm/ 3.84 MHz			
PCCPCH_RSCP	dBm	-63	-66			-66	-63		
Qrxlevmin	dBm	-103				-103			
Qoffset1$_{s,n}$	dB	C1, C2: 0				C2, C1: 0			
Qhyst1$_s$	dB	0				0			
Treselection	s	0				0			
Sintersearch	dB	not sent				not sent			
Propagation Condition		AWGN				AWGN			
NOTE: In the case of multi-frequency cell for 1.28 Mcps TDD option, the UTRA RF Channel Number is the primary frequency"s channel number.									

A.4.2.2A.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$T_{evaluateTDD} + T_{SI}$$

where:

$T_{evaluateTDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ TDD}$ of 6.4s according to Table 4.1A in section 4.2.

T_{SI} Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in [16] for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

A.4.2.2B Scenario 2B: 3.84 Mcps/1.28 Mcps TDD cell re-selection

A.4.2.2B.1 Test Purpose and Environment

This test is to verify the requirement for the 3.84 Mcps/1.28 Mcps TDD cell re-selection delay reported in section 4.2.

This scenario implies the presence of 1 3.84 Mcps TDD serving cell, and 1 1.28 Mcps TDD cell to be re-selected. The UE is requested to monitor neighbouring cells on 1 3.84Mcps TDD carrier and 1 1.28Mcps TDD carrier. Test parameters are given in Table A.4.3C, A4.4C, and A.4.4D. Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4.3C: General test parameters for 3.84 Mcps /1.28 Mcps TDD cell re-selection

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell 1	3.84 Mcps TDD OPTION cell
	Neighbour cell		Cell 2	1.28 Mcps TDD OPTION cell
Final condition	Active cell		Cell 2	1.28 Mcps TDD OPTION cell
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
$Q_{rxlevmin}$		dBm	-103	
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1,28	The value shall be used for all cells in the test.
DRX cycle length		s	1,28	The value shall be used for all cells in the test.
T1		s	30	
T2		s	15	

Table A.4.4C: Cell 1 specific test parameters for 3.84 Mcps TDD/1.28 Mcps TDD cell re-selection

Parameter	Unit	Cell 1			
Timeslot Number		0		8	
		T1	T2	T 1	T 2
UTRA RF Channel Number		Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9
SCH_t_{offset}		0			
PICH_Ec/Ior	dB			-3	-3
OCNS_Ec/Ior	dB	-3.12			
$\hat{I}_{or}/I_{oc}$	dB	10	7	10	7
PCCPCH_RSCP	dBm	-63	-66		
$Qoffset1_{s,n}$	dB	C1, C2: 0			
$Qhyst1_{s}$	dB	0			
Treselection	s	0			
Sintersearch	dB	not sent			
I_{oc}	dBm/3.84 MHz	-70			
Propagation Condition		AWGN			

Table A.4.4D: Cell 2 specific test parameters for 3.84 Mcps TDD/1.28 Mcps TDD cell re-selection

Parameter	Unit	Cell 2			
Timeslot Number		0		DwPTS	
		T1	T2	T 1	T 2
UTRA RF Channel Number*		Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3		
DwPCH_Ec/Ior	dB			0	0
OCNS_Ec/Ior	dB	-3			
$\hat{I}_{or}/I_{oc}$	dB	7	10	7	10
PCCPCH_RSCP	dBm	-66	-63		
$Qoffset1_{s,n}$	dB	C2, C1: 0			
$Qhyst1_{s}$	dB	0			
Treselection	s	0			
Sintersearch	dB	not sent			
I_{oc}	dBm/1.28 MHz	-70			
Propagation Condition		AWGN			
* Note: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency"s channel number.					

A.4.2.2B.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the SYNCH-UL sequence in the UpPTS for sending the RRC CONNECTION REQUEST to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$T_{evaluateNTDD} + T_{SI}$$

where:

$T_{evaluateNTDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ NTDD}$ of 6.4s according to Table 4.1 in section 4.2.

T_{SI} Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in [16] for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

A.4.2.2C Scenario 2C: 3.84 Mcps TDD cell re-selection for 7.68 Mcps TDD UE

A.4.2.2C.1 Test Purpose and Environment

This test is to verify the requirement for the 7.68 Mcps TDD OPTION/3.84 Mcps TDD OPTION cell re-selection delay reported in section 4.2.

This scenario implies the presence of 1 higher chip rate (7.68 Mcps TDD OPTION) and 1 high chip rate (3.84 Mcps TDD OPTION)) cell as given in Table A.4.4E and A4.4F.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304.

Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4.4E: General test parameters for TDD higher chip rate (7.68 Mcps) to TDD high chip rate (3.84 Mcps) cell re-selection

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	7.68 Mcps TDD OPTION cell
	Neighbour cell		Cell2	3.84 Mcps TDD OPTION cell
Final condition	Active cell		Cell2	3.84 Mcps TDD OPTION cell
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-102	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		S	1,28	The value shall be used for all cells in the test.
DRX cycle length		S	1,28	The value shall be used for all cells in the test.
T1		S	30	
T2		S	15	

Table A.4.4F: Test parameters for TDD higher chip rate (7.68 Mcps) to TDD high chip rate (3.84 Mcps) cell re-selection

Parameter	Unit	Cell 1				Cell 2			
Timeslot Number		0		8		0		8	
		T1	T2	T 1	T 2	T1	T2	T 1	T 2
UTRA RF Channel Number		Channel 1				Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5
PICH_Ec/Ior	dB			-3	-3			-3	-3
OCNS_Ec/Ior		-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	10	7	10	7	7	10	7	10
PCCPCH_RSCP	dBm	-63	-66			-66	-63		
$Qoffset1_{s,n}$	dB	C1, C2: 0				C2, C1: 0			
$Qhyst1_s$	dB	0				0			
Treselection	s	0				0			
Sintersearch	dB	not sent				not sent			
I_{oc}		-70 dBm/7.68 MHz				-70 dBm/3.84 MHz			
Propagation Condition		AWGN							

A.4.2.2C.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$T_{evaluateTDD} + T_{SI}$$

where:

$T_{evaluateTDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ TDD}$ of 6.4s according to Table 4.1B in section 4.2.

T_{SI} Maximum repetition rate of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

A.4.2.2D Scenario 2D: 3.84 Mcps/7.68 Mcps TDD cell re-selection

A.4.2.2D.1 Test Purpose and Environment

This test is to verify the requirement for the 3.84 Mcps/7.68 Mcps TDD cell re-selection delay reported in section 4.2.

This scenario implies the presence of one 3.84 Mcps TDD serving cell, and one 7.68 Mcps TDD cell to be re-selected. The UE is requested to monitor neighbouring cells on one 3.84Mcps TDD carrier and one 7.68 Mcps TDD carrier. Test parameters are given in Table A.4.4G and A.4.4H. Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4.4G: General test parameters for 3.84 Mcps /7.68 Mcps TDD cell re-selection

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell 1	3.84 Mcps TDD OPTION cell
	Neighbour cell		Cell 2	7.68 Mcps TDD OPTION cell
Final condition	Active cell		Cell 2	7.68 Mcps TDD OPTION cell
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
$Q_{rxlevmin}$		dBm	-102	
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		S	1,28	The value shall be used for all cells in the test.
DRX cycle length		S	1,28	The value shall be used for all cells in the test.
T1		S	30	
T2		S	15	

Table A.4.4H: Cell 1 specific test parameters for 3.84 Mcps TDD/7.68 Mcps TDD cell re-selection

Parameter	Unit	Cell 1				Cell 2			
Timeslot Number		0		8		0		8	
		T1	T2	T 1	T 2	T1	T2	T 1	T 2
UTRA RF Channel Number		Channel 1				Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5
PICH_Ec/Ior	dB			-3	-3			-3	-3
OCNS_Ec/Ior		-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	10	7	10	7	7	10	7	10
PCCPCH_RSCP	dBm	-63	-66			-66	-63		
Qoffset1$_{s,n}$	dB	C1, C2: 0				C2, C1: 0			
Qhyst1$_s$	dB	0				0			
Treselection	s	0				0			
Sintersearch	dB	not sent				not sent			
I_{oc}		-70 dBm/3.84 MHz				-70 dBm/7.68 MHz			
Propagation Condition		AWGN							

A.4.2.3 Scenario 3: TDD/FDD cell re-selection

A.4.2.3.1 Test Purpose and Environment

A.4.2.3.1.1 3.84 Mcps TDD option

This test is to verify the requirement for the TDD/FDD cell re-selection delay reported in section 4.2.2.

This scenario implies the presence of 1 UTRA TDD and 1 UTRA FDD cell as given in Table A.4.5 and A.4.6. The maximum repetition period of the relevant system information blocks that need to be received by the UE to camp on a cell shall be 1280 ms.

Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4.5: General test parameters for the TDD/FDD cell re-selection

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	TDD cell
	Neighbour cells		Cell2	FDD cell
Final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
DRX cycle length		s	1.28	The value shall be used for all cells in the test.
T1		s	30	During T1 cell 1 better ranked than cell 2
T2		s	15	During T2 cell 2 better ranked than cell 1

Table A.4.6: TDD/FDD cell re-selection

Parameter	Unit	Cell 1				Cell 2	
Timeslot Number		**0**		**8**		**n.a**	**n.a.**
		T1	T2	T 1	T 2	T 1	T 2
UTRA RF Channel Number		Channel 1				Channel 2	
CPICH_Ec/Ior	dB	n.a.		n.a.		-10	-10
PCCPCH_Ec/Ior	dB	-3	-3			-12	-12
SCH_Ec/Ior	dB	-9	-9	-9	-9	-12	-12
SCH_t_{offset}		0	0	0	0	n.a.	n.a.
PICH_Ec/Ior	dB			-3	-3	-15	-15
OCNS_EcIor	dB	-3,12	-3,12	-3,12	-3,12	-0,941	-0,941
$\hat{I}_{or}/I_{oc}$	dB	3	-2	3	-2	-2	3
I_{oc}	dBm/3.84 MHz	-70					
CPICH_RSCP	dBm	n.a.		n.a.		-82	-77
PCCPCH_RSCP	dBm	-70	-75			n.a.	n.a.
Cell_selection_and reselection_quality _measure		CPICH_RSCP				*CPICH_RSCP*	
Qrxlevmin	dBm	-102				-115	
Qoffset1$_{s,n}$	dB	C1, C2: -12				C2, C1: +12	
Qhyst1$_s$	dB	0				0	
Treselection	s	0				0	
Propagation Condition		AWGN				AWGN	

A.4.2.3.1.2 1.28 Mcps TDD option

This test is to verify the requirement for the 1.28 Mcps TDD OPTION/FDD cell re-selection delay reported in section 4.2.

This scenario implies the presence of 1 1.28Mps TDD serving cell, and 1 FDD cell to be selected. The UE is requested to monitor neighbouring cells on 1 1.28Mcps TDD carrier and 1 FDD carrier. Test parameters are given in Table A.4.5A, A4.6A, and A.4.6AA.

Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4.5A: General test parameters for the TDD/FDD cell re-selection

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	1.28 Mcps TDD OPTION cell
	Neighbour cells		Cell2	FDD cell
Final condition	Active cell		Cell2	FDD cell
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1.28	The value shall be used for all cells in the test.
DRX cycle length		s	1.28	The value shall be used for all cells in the test.
T1		s	30	
T2		s	15	

Table A.4.6A: Cell 1 specific test parameters for 1.28 Mcps TDD/FDD cell re-selection

Parameter	Unit	Cell 1			
Timeslot Number		0		DwPTS	
		T1	T2	T 1	T 2
UTRA RF Channel Number*		Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3		
DwPCH_Ec/Ior	dB			0	0
OCNS_Ec/Ior	dB	-3			
$\hat{I}_{or}/I_{oc}$	dB	8	2	8	2
PCCPCH_RSCP	dBm	-65	-71		
Cell_selection_and_ reselection_quality_measure		CPICH RSCP			
Qrxlevmin	dBm	-103			
$Qoffset1_{s,n}$	dB	C1, C2: -12			
$Qhyst1_{s}$	dB	0			
Treselection	s	0			
Sintersearch	dB	not sent			
I_{oc}	dBm/1.28 MHz	-70			
Propagation Condition		AWGN			
* Note: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency"s channel number.					

Table A.4.6AA: Cell 2 specific test parameters for 1.28 Mcps TDD/FDD cell re-selection

Parameter	Unit	Cell 2 (UTRA)	
		T1	**T2**
UTRA RF Channel Number		Channel 2	
CPICH_Ec/Ior	dB	-10	
PCCPCH_Ec/Ior	dB	-12	
SCH_Ec/Ior	dB	-12	
PICH_Ec/Ior	dB	-15	
OCNS_Ec/Ior	dB	-0.941	
$\hat{I}_{or}/I_{oc}$	dB	-3	3
CPICH_RSCP	dBm	-83	-77
Cell_selection_and_ reselection_quality_measure		CPICH RSCP	
Qrxlevmin	dBm	-115	
$Qoffset1_{s,n}$	dB	C2, C1: +12	
Qhyst1	dB	0	
Treselection	s	0	
Sintersearch	dB	not sent	
I_{oc}	dBm/3.84 MHz	-70	
Propagation Condition		AWGN	

A.4.2.3.1.3 7.68 Mcps TDD option

This test is to verify the requirement for the TDD/FDD cell re-selection delay reported in section 4.2.2.

This scenario implies the presence of 1 UTRA TDD and 1 UTRA FDD cell as given in Table A.4.5B and A.4.6B. The maximum repetition period of the relevant system information blocks that need to be received by the UE to camp on a cell shall be 1280 ms.

Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4.5B: General test parameters for the TDD/FDD cell re-selection

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	TDD cell
	Neighbour cells		Cell2	FDD cell
Final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
DRX cycle length		s	1.28	The value shall be used for all cells in the test.
T1		s	30	During T1 cell 1 better ranked than cell 2
T2		s	15	During T2 cell 2 better ranked than cell 1

Table A.4.6B: TDD/FDD cell re-selection

Parameter	Unit	Cell 1				Cell 2	
Timeslot Number		**0**		**8**		**n.a**	**n.a.**
		T1	T2	T 1	T 2	T 1	T 2
UTRA RF Channel Number		Channel 1				Channel 2	
CPICH_Ec/Ior	dB	n.a.		n.a.		-10	-10
PCCPCH_Ec/Ior	dB	-3	-3			-12	-12
SCH_Ec/Ior	dB	-9	-9	-9	-9	-12	-12
SCH_t_{offset}		0	0	0	0	n.a.	n.a.
PICH_Ec/Ior	dB			-3	-3	-15	-15
OCNS_EcIor	dB	-3,12	-3,12	-3,12	-3,12	-0,941	-0,941
$\hat{I}_{or}/I_{oc}$	dB	3	-2	3	-2	-2	3
I_{oc}		-70 dBm/7.68 MHz				-70 dBm/3.84 MHz	
CPICH_RSCP	dBm	n.a.		n.a.		-82	-77
PCCPCH_RSCP	dBm	-70	-75			n.a.	n.a.
Cell_selection_and reselection_quality _measure		CPICH_RSCP				*CPICH_RSCP*	
Qrxlevmin	dBm	-102				-115	
$Qoffset1_{s,n}$	dB	C1, C2: -12				C2, C1: +12	
$Qhyst1_{s}$	dB	0				0	
Treselection	s	0				0	
Propagation Condition		AWGN				AWGN	

A.4.2.3.2 Test Requirements

A.4.2.3.2.1 3.84 Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE:

The cell re-selection delay can be expressed as: $T_{evaluateFDD} + T_{SI}$, where:

$T_{evaluateFDD}$ See Table 4.1 in section 4.2.2.

T_{SI} Maximum repetition rate of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

A.4.2.3.2.2 1.28 Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$T_{evaluateFDD} + T_{SI}$$

where:

$T_{evaluateFDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ FDD}$ of 6.4s according to Table 4.1A in section 4.2.

T_{SI} Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

A.4.2.3.2.3 7.68 Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE:

The cell re-selection delay can be expressed as:

$$T_{evaluateFDD} + T_{SI}, \text{ where:}$$

$T_{evaluateFDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ FDD}$ of 6.4s according to Table 4.1B in section 4.2.

T_{SI} Maximum repetition rate of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

A.4.2.4 Scenario 4: inter RAT cell re-selection

A.4.2.4.1 Test Purpose and Environment

A.4.2.4.1.1 3.84 Mcps TDD option

This test is to verify the requirement for the UTRA TDD to GSM cell re-selection delay reported in section 4.2.

This scenario implies the presence of 1 UTRA TDD serving cell, and 1 GSM cell to be re-selected. The UE is requested to monitor neighbouring cells on 1 UTRA TDD carrier and 12 GSM cells. Test parameters are given in Table, A.4.7, A.4.8, A.4.9. Cell 1 and Cell 2 shall belong to different Location Areas.

For this test environment the ranking/mapping function indicated in the broadcast of cell 1 shall be in such a way as to enable the UE to evaluate that the TDD cell 1 is better ranked as the GSM cell 2 during T1 and the GSM cell 2 is better ranked than the TDD cell 1 during T2.

Table A.4.7: General test parameters for UTRAN to GSM Cell Re-selection

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	UTRA TDD Cell
	Neighbour cell		Cell2	GSM Cell
Final condition	Active cell		Cell2	
HCS			Not used	
DRX cycle length		s	1,28	UTRA TDD cell
T1		s	45	
T2		s	35	

Table A.4.8: Cell re-selection UTRA TDD to GSM cell case (cell 1)

Parameter	Unit	Cell 1 (UTRA TDD)			
Timeslot Number		**0**		**8**	
		T1	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0
PICH_Ec/Ior	dB			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	3	-2	3	-2
I_{oc}	dBm/3, 84 MHz	-70		-70	
PCCPCH RSCP	dBm	-70	-75	n.a.	n.a.
Propagation Condition		AWGN		AWGN	
Qrxlevmin	dBm	-102			
Qoffset1$_{s,n}$	dB	C1, C2: 0			
Qhyst1	dB	0			
Treselection	s	0			
Ssearch$_{RAT}$	dB	not sent			

Table A.4.9: Cell re-selection UTRA TDD to GSM cell case (cell 2)

Parameter	Unit	Cell 2 (GSM)	
		T1	**T2**
Absolute RF Channel Number		ARFCN 1	
RXLEV	dBm	-90	-75
RXLEV_ACCESS_MIN	dBm	-104	
MS_TXPWR_MAX_CCH	dBm	33	

A.4.2.4.1.2 1.28 Mcps TDD option

This test is to verify the requirement for the UTRAN to GSM cell re-selection delay reported in section 4.2.

This scenario implies the presence of 1 UTRAN serving cell, and 1 GSM cell to be re-selected. Test parameters are given in Table A.4.7A, A.4.8A, A.4.9A.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304. Cell 1 and cell 2 shall belong to different location areas.

Table A.4.7A: General test parameters for UTRAN (1.28 Mcps TDD OPTION) to GSM Cell Re-selection

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	1.28 Mcps TDD OPTION cell
	Neighbour cell		Cell2	GSM cell
Final condition	Active cell		Cell2	GSM cell
DRX cycle length		s	1,28	
HCS			Not used	
T1		s	45	
T2		s	15	

Table A.4 8A: Cell re-selection UTRAN to GSM cell case (cell 1)

Parameter	Unit	Cell 1 (UTRA)			
Timeslot Number		0		DwPTS	
		T1	T2	T1	T2
UTRA RF Channel Number*		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3	-3		
DwPCH_Ec/Ior	dB			0	0
OCNS_Ec/Ior	dB	-3	-3		
$\hat{I}_{or}/I_{oc}$	dB	13	-12	13	-12
I_{oc}	dBm/1.28 MHz	-80			
PCCPCH RSCP	dBm	-70	-95	n.a.	n.a.
Propagation Condition		AWGN		AWGN	
Treselection	s	0			
$Ssearch_{RAT}$	dB	Not sent			
Qrxlevmin	dBm	-103			
$Qoffset1_{s,n}$	dB	C1, C2: 0			
$Qhyst1_{s}$	dB	0			
* Note: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency"s channel number.					

Table A.4.9A: Cell re-selection UTRAN to GSM cell case (cell 2)

Parameter	Unit	Cell 2 (GSM)	
		T1	T2
Absolute RF Channel Number		ARFCN 1	
RXLEV	dBm	-75	-75
RXLEV_ACCESS_MIN	dBm	-104	
MS_TXPWR_MAX_CCH	dBm	33	

A.4.2.4.1.3 7.68 Mcps TDD option

This test is to verify the requirement for the UTRA TDD to GSM cell re-selection delay reported in section 4.2.

This scenario implies the presence of 1 UTRA TDD serving cell, and 1 GSM cell to be re-selected. The UE is requested to monitor neighbouring cells on 1 UTRA TDD carrier and 12 GSM cells. Test parameters are given in Table, A.4.7B, A.4.8B, A.4.9B. Cell 1 and Cell 2 shall belong to different Location Areas.

For this test environment the ranking/mapping function indicated in the broadcast of cell 1 shall be in such a way as to enable the UE to evaluate that the TDD cell 1 is better ranked as the GSM cell 2 during T1 and the GSM cell 2 is better ranked than the TDD cell 1 during T2.

Table A.4.7B: General test parameters for UTRAN to GSM Cell Re-selection

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	UTRA TDD Cell
	Neighbour cell		Cell2	GSM Cell
Final condition	Active cell		Cell2	
HCS			Not used	
DRX cycle length		s	1,28	UTRA TDD cell
T1		s	45	
T2		s	35	

Table A.4.8B: Cell re-selection UTRA TDD to GSM cell case (cell 1)

Parameter	Unit	Cell 1 (UTRA TDD)			
Timeslot Number		**0**		**8**	
		T1	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0
PICH_Ec/Ior	dB			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	3	-2	3	-2
I_{oc}	dBm/7, 68 MHz	-70		-70	
PCCPCH RSCP	dBm	-70	-75	n.a.	n.a.
Propagation Condition		AWGN		AWGN	
Qrxlevmin	dBm	-102			
Qoffset1$_{s,n}$	dB	C1, C2: 0			
Qhyst1	dB	0			
Treselection	s	0			
Ssearch$_{RAT}$	dB	not sent			

Table A.4.9B: Cell re-selection UTRA TDD to GSM cell case (cell 2)

Parameter	Unit	Cell 2 (GSM)	
		T1	**T2**
Absolute RF Channel Number		ARFCN 1	
RXLEV	dBm	-90	-75
RXLEV_ACCESS_MIN	dBm	-104	
MS_TXPWR_MAX_CCH	dBm	33	

A.4.2.4.2 Test Requirements

A.4.2.4.2.1 3.84 Mpcs TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the RR Channel Request message for location update to Cell 2.

The cell re-selection delay shall be less than 26 s + T_{BCCH}, where T_{BCCH} is the maximum time allowed to read BCCH data in the GSM cell [21].

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$4 * T_{measureGSM} + T_{BCCH}$$

where:

$T_{measureGSM}$ Equal to the value specified in Table 4.1 in section 4.2

T_{BCCH} Equal to 1.9 s, i.e. the maximum time allowed to read BCCH data when synchronised to a BCCH carrier from a GSM cell [21].

This gives a total of 25.6 s + T_{BCCH}, allow 26 s + T_{BCCH} in the test case.

A.4.2.4.2.2 1.28 Mpcs TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send RR Channel Request message to perform a Location update.

The cell re-selection delay shall be less than 8 s + T_{BCCH} where T_{BCCH} is the maximum time allowed to read BCCH data from GSM cell [21].

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$Max(3*T_{measureNTDD}\ ,\ T_{measure\ GSM}+1DRX)+\ T_{BCCH}$$

where:

$T_{measureNTDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{measureNTDD}$ of 1.28s according to Table 4.1A in section 4.2.

$T_{measureGSM}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{measureGSM}$ of 6.4s according to Table 4.1A in section 4.2.

DRX cycle length 1.28s is assumed, see Table A.4.1A

T_{BCCH} Maximum time allowed to read BCCH data from GSM cell [20].

According to [21], the maximum time allowed to read the BCCH data, when being synchronized to a BCCH carrier, is 1.9 s.

This gives a total of 7.68s +T_{BCCH}, thus allow 8s +$T_{BCCH.}$

A.4.2.4.2.3 7.68 Mpcs TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the RR Channel Request message for location update to Cell 2.

The cell re-selection delay shall be less than 26 s + T_{BCCH}, where T_{BCCH} is the maximum time allowed to read BCCH data in the GSM cell [21].

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$4 * T_{measureGSM} + T_{BCCH}$$

where:

$T_{measureGSM}$ Equal to the value specified in Table 4.1B in section 4.2

T_{BCCH} Equal to 1.9 s, i.e. the maximum time allowed to read BCCH data when synchronised to a BCCH carrier from a GSM cell [21].

This gives a total of 25.6 s + T_{BCCH}, allow 26 s + T_{BCCH} in the test case.

A.4.2.4.3 Scenario 4A Test Purpose and Environment

A.4.2.4.3.1 (void)

A.4.2.4.3.2 1.28 Mcps TDD option

This test is to verify the requirement for the UTRAN to GSM cell re-selection delay reported in section 4.2.

This scenario implies the presence of 1 UTRAN serving cell, and 1 GSM cell to be re-selected. Test parameters are given in Table A.4.10A, A.4.11A, A.4.12A.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304. Cell 1 and cell 2 shall belong to different location areas.

Table A.4.10A: General test parameters for UTRAN (1.28 Mcps TDD OPTION) to GSM Cell Re-selection

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	1.28 Mcps TDD OPTION cell
	Neighbour cell		Cell2	GSM cell
Final condition	Active cell		Cell2	GSM cell
DRX cycle length		s	1,28	
HCS			Not Used	
T1		s	45	
T2		s	45	

Table A.4 11A: Cell re-selection UTRAN to GSM cell case (cell 1)

Parameter	Unit	Cell 1 (UTRA)			
Timeslot Number		0		DwPTS	
		T1	T2	T1	T2
UTRA RF Channel Number (NOTE)		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3	-3		
DwPCH_Ec/Ior	dB			0	0
OCNS_Ec/Ior	dB	-3	-3		
$\hat{I}_{or}/I_{oc}$	dB	6	6	6	6
I_{oc}	dBm/1.28 MHz	-80			
PCCPCH RSCP	dBm	-77	-77		
Propagation Condition		AWGN		AWGN	
Treselection	s	0			
$Ssearch_{RAT}$	dB	Not sent			
Qrxlevmin	dBm	-103			
$Qoffset1_{s,n}$	dB	C1, C2: 0			
$Qhyst1_{s}$	dB	0			
NOTE: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency"s channel number.					

Table A.4.12A: Cell re-selection UTRAN to GSM cell case (cell 2)

Parameter	Unit	Cell 2 (GSM)	
		T1	T2
Absolute RF Channel Number		ARFCN 1	
RXLEV	dBm	-90	-70
RXLEV_ACCESS_MIN	dBm	-104	
MS_TXPWR_MAX_CCH	dBm	33	

A.4.2.4.4 Scenario 4A Requirements

A.4.2.4.4.1 (void)

A.4.2.4.4.2 1.28 Mpcs TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send RR Channel Request message for location update to Cell 2.

The cell re-selection delay shall be less than 26 s+ T_{BCCH}, where T_{BCCH} is the maximum time allowed to read BCCH data from GSM cell [21].

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The UE shall keep a running average of 4 measurements, thus gives 4* $T_{measureGSM}$ +T_{BCCH}, where:

$T_{measureGSM}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{measureGSM}$ of 6.4s according to Table 4.1A in section 4.2.

T_{BCCH} Maximum time allowed to read BCCH data from GSM cell [21].

According to [21], the maximum time allowed to read the BCCH data, when being synchronized to a BCCH carrier, is 1.9 s.

This gives a total of 25.6s +T_{BCCH}, thus allow 26s +$T_{BCCH.}$

A.5 UTRAN Connected Mode Mobility

A.5.1 TDD/TDD Handover

A.5.1.1 3.84Mcps TDD option

A.5.1.1.1 Handover to intra-frequency cell

A.5.1.1.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the intra-frequency handover delay in CELL_DCH state in the single carrier case reported in section 5.1.2.1.

The test parameters are given in Table A.5.1.1 and A.5.1.2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G shall be used, and that P-CCPCH RSCP and SFN-CFN observed timed difference shall be reported together with Event 1G. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration message with activation time "now" with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE during period T2, after the UE has reported

event 1G. The starting point of T3 is definied as the end of the last TTI containing the physical channel reconfiguration message.

The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2. The UL DPCH shall be transmitted in timeslot 12.

Table A.5.1.1: General test parameters for Handover to intra-frequency cell

Parameter		Unit	Value	Comment
DCH parameters			DL and UL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2 and A.2.1
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final condition	Active cell		Cell 2	
HCS			Not used	
O		dB	0	Cell individual offset. This value shall be used for all cells in the test.
Hysteresis		dB	0	
Time to Trigger		ms	0	
Filter coefficient			0	
Monitored cell list size			6 TDD neighbours on Channel 1	
T1		s	10	
T2		s	10	
T3		s	10	

Table A.5.1.2: Cell specific test parameters for Handover to intra-frequency cell

Parameter	Unit	Cell 1						Cell 2					
DL timeslot number		**0**			**4**			**0**			**5**		
		T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
UTRA RF Channel Number		Channel 1						Channel 1					
PCCPCH_Ec/Ior	dB	-3			n.a.			-3			n.a.		
SCH_Ec/Ior	dB	-9			n.a.			-9			n.a.		
SCH_t_{offset}	dB	0			n.a.			5			n.a.		
DPCH_Ec/Ior	dB	n.a.			Note 1		n.a.	n.a.			n.a.		Note 1
OCNS_Ec/Ior	dB	-3,12			Note 2		n.a.	n.a.	-3,12		n.a.		Note 2
$\hat{I}_{or}/I_{oc}$	dB	1						-Inf.	3		-Inf.		3
PCCPCH RSCP	dBm	-72			n.a.			-Inf.	-70		n.a.		
I_{oc}	dBm/ 3,84 MHz	-70											
Propagation Condition		AWGN											
Note 1: The DPCH level is controlled by the power control loop Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Ior .													

A.5.1.1.1.2 Test Requirements

The UE shall start to transmit the UL DPCH to Cell 2 less than 160 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

A.5.1.1.2 Handover to inter-frequency cell

A.5.1.1.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the inter-frequency handover delay in CELL_DCH state in the dual carrier case reported in section 5.1.2.1.

The test consists of two successive time periods, with a time duration T1 and T2. The test parameters are given in tables A.5.1.3 and A.5.1.4 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used. The PCCPCH RSCP and SFN-CFN observed time difference of the best cell on the unused frequency shall be reported together with Event 2C reporting. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration message with activation time "now" with one active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE during period T2, after the UE has reported event 2C. The starting point of T3 is defined as the end of the last TTI containing the physical channel reconfiguration message.

The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2. The UL DPCH shall be transmitted in timeslot 12.

Table A.5.1.3: General test parameters for Handover to inter-frequency cell

Parameter		Unit	Value	Comment
DCH parameters			DL and UL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2 and A.2.1
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final condition	Active cell		Cell 2	
HCS			Not used	
O		dB	0	Cell individual offset. This value shall be used for all cells in the test.
Hysteresis		dB	0	Hysteresis parameter for event 2C
Time to Trigger		ms	0	
Threshold non-used frequency		dBm	-80	Applicable for Event 2C
Filter coefficient			0	
Monitored cell list size			6 TDD neighbours on Channel 1 6 TDD neighbours on Channel 2	
T_{SI}		s	1.28	The value shall be used for all cells in the test.
T1		s	10	
T2		s	10	
T3		s	10	

TableA.5.1.4: Cell Specific parameters for Handover to inter-frequency cell

Parameter	Unit	Cell 1						Cell 2					
DL timeslot number		**0**			**4**			**2**			**5**		
		T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
UTRA RF Channel Number		Channel 1						Channel 2					
PCCPCH_Ec/Ior	dB	-3			n.a.			-3			n.a.		
SCH_Ec/Ior	dB	-9			n.a.			-9			n.a.		
SCH_t_{offset}	dB	0			n.a.			5			n.a.		
DPCH_Ec/Ior	dB	n.a.			Note 1		n.a.	n.a.			n.a.		Note 1
OCNS_Ec/Ior	dB	-3,12			Note 2		n.a.	n.a.	-3,12		n.a.		Note 2
$\hat{I}_{or}/I_{oc}$	dB	1						-Inf.	7		-Inf.		7
PCCPCH RSCP	dBm	-72			n.a.			-Inf.	-66		n.a.		
I_{oc}	dBm/ 3,84 MHz	-70											
Propagation Condition		AWGN											
Note 1: The DPCH level is controlled by the power control loop Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Ior .													

A.5.1.1.2.2 Test Requirements

The UE shall start to transmit the UL DPCH to Cell 2 less than 160 ms from the beginning of time period T2.

The rate of correct handovers observed during repeated tests shall be at least 90%.

A.5.1.2 1.28Mcps TDD option

A.5.1.2.1 Handover to intra-frequency cell

A.5.1.2.1.1 Scenario 1

This test case is applicable for UE handovers in single frequency network and UE handovers from primary frequency to primary frequency in multi-frequency network.

A.5.1.2.1.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the intra-frequency handover delay in CELL_DCH state in the case as reported in section 5.1.2.1.2.

The test parameters are given in Table A.5.1.5 and A.5.1.6 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G shall be used, and that PCCPCH RSCP and SFN-CFN observed timed difference shall be reported together with Event 1G. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time "now" at the beginning of T3 with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE during period T2, after the UE has reported event 1G. The starting point of T3 is defined as the end of the last TTI containing the physical channel reconfiguration message.

Table A.5.1.5: General test parameters for intra-frequency handover

Parameter		Unit	Value	Comment
DPCH parameters			DL and UL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2.2 and A.2.1.2
Power Control			On	
Target quality value on DPCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	In the case of multi-frequency network, the UE has a RRC connection on the primary frequency in cell 1.
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	In the case of multifrequency network, UE will handover to the primary frequency in cell 2.
O		dB	0	cell-individual-offset The value shall be used for all cells in the test.
Hysteresis		dB	0	
Time to Trigger		ms	0	
Filter coefficient			0	
Monitored cell list size			6 TDD neighbours on Channel 1	
T1		s	5	
T2		s	5	
T3		s	5	

Table A.5.1.6: Cell specific test parameters for intra-frequency handover

Parameter	Unit	Cell 1								
Timeslot Number		0			DwPTS			5		
		T1	T2	T3	T1	T2	T3	T1	T2	T3
UTRA RF Channel Number(Note3)		Channel 1								
PCCPCH_Ec/Ior	dB	-3						n.a.		
DwPCH_Ec/Ior					0					
DPCH_Ec/Ior	dB	n.a.			n.a.			Note1		n.a.
OCNS_Ec/Ior	dB	-3						Note2		
$\hat{I}_{or}/I_{oc}$	dB	3			3			3		
I_{oc}	dBm/ 1.28 MHz	-70								
PCCPCH_RSCP	dBm	-70			n.a.			n.a.		
Propagation Condition		AWGN								
Parameter	**Unit**	**Cell 2**								
Timeslot Number		**0**			**DwPTS**			**5**		
		T1	T2	T3	T1	T2	T3	T1	T2	T3
UTRA RF Channel Number(Note3)		Channel 1								
PCCPCH_Ec/Ior	dB	-3						n.a.		
DwPCH_Ec/Ior					0					
DPCH_Ec/Ior	dB	n.a.			n.a.			n.a.		Note1
OCNS_Ec/Ior	dB	-3						Note2		
$\hat{I}_{or}/I_{oc}$	dB	-Inf.	6		-Inf.	6		-Inf.		6
I_{oc}	dBm/ 1.28 MHz	-70								
PCCPCH_RSCP	dBm	-Inf.	-67		n.a.			n.a.		
Propagation Condition		AWGN								

Note 1: The DPCH level is controlled by the power control loop
Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}.
Note 3: In the case of multi-frequency network, the UTRA RF Channel Number is the primary frequency"s channel number.

A.5.1.2.1.1.2 Test Requirements

The UE shall start to transmit the UL DPCH to cell 2 less than 160 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

A.5.1.2.1.2 Scenario 2

This test case is applicable for UE handovers from secondarhy frequency to parimary frequency in the case of multi-frequency network.

A.5.1.2.1.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the intra-frequency handover delay in CELL_DCH state in the case as reported in section 5.1.2.1.2.

The test parameters are given in Table A.5.1.5A and A.5.1.6A below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G shall be used, and that PCCPCH RSCP and SFN-CFN observed timed difference shall be reported together with Event 1G. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time "now" at the beginning of T3 with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE during period T2, after the UE has reported event 1G. The starting point of T3 is defined as the end of the last TTI containing the physical channel reconfiguration message.

Table A.5.1.5A: General test parameters for intra-frequency handover

Parameter		Unit	Value	Comment
DPCH parameters			DL and UL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2.2 and A.2.1.2
Power Control			On	
Target quality value on DPCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	The UE has a RRC connection on the secondary frequency in cell 1.
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	The UE will handover to the primary frequency in cell 2.
O		dB	0	cell-individual-offset The value shall be used for all cells in the test.
Hysteresis		dB	0	
Time to Trigger		ms	0	
Filter coefficient			0	
Monitored cell list size			6 TDD neighbours on Channel 1	
T1		s	5	
T2		s	5	
T3		s	5	

Table A.5.1.6A: Cell specific test parameters for intra-frequency handover

Parameter	Unit	Cell 1								
Timeslot Number		**0**			**DwPTS**			**5**		
		T1	T2	T3	T1	T2	T3	T1	T2	T3
UTRA RF Channel Number(Note3)		Channel 1								
UTRA RF Channel Number(Note4)		Channel 2								
PCCPCH_Ec/Ior	dB	-3						n.a.		
DwPCH_Ec/Ior					0					
DPCH_Ec/Ior	dB	n.a.			n.a.			Note1		n.a.
OCNS_Ec/Ior	dB	-3						Note2		
$\hat{I}_{or}/I_{oc}$	dB	3			3			3		
I_{oc}	dBm/ 1.28 MHz	-70								
PCCPCH_RSCP	dBm	-70			n.a.			n.a.		
Propagation Condition		AWGN								
Parameter	**Unit**	**Cell 2**								
Timeslot Number		**0**			**DwPTS**			**5**		
		T1	T2	T3	T1	T2	T3	T1	T2	T3
UTRA RF Channel Number(Note3)		Channel 2								
UTRA RF Channel Number(Note4)		Channel 1								
PCCPCH_Ec/Ior	dB	-3						n.a.		
DwPCH_Ec/Ior					0					
DPCH_Ec/Ior	dB	n.a.			n.a.			n.a.		Note1
OCNS_Ec/Ior	dB	-3						Note2		
$\hat{I}_{or}/I_{oc}$	dB	-Inf.	6		-Inf.	6		-Inf.		6
I_{oc}	dBm/ 1.28 MHz	-70								
PCCPCH_RSCP	dBm	-Inf.	-67		n.a.			n.a.		
Propagation Condition		AWGN								

Note 1: The DPCH level is controlled by the power control loop
Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}.
Note3: The UTRA RF Channel Number is the primary frequency"s channel number.
Note3: The UTRA RF Channel Number is the secondary frequency"s channel number.

A.5.1.2.1.2.2 Test Requirements

The UE shall start to transmit the UL DPCH in cell 2 less than 160 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

A.5.1.2.2 Handover to inter-frequency cell

A.5.1.2.2.1 Scenario 1

This test case is applicable for UE handovers in single frequency network and UE handovers from primary frequency to the primary frequency in multi-frequency network.

A.5.1.2.2.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the inter-frequency handover delay in CELL_DCH in the case as reported in section 5.1.2.1.2.

The test consists of three successive time periods, with a time duration T1, T2 and T3. The test parameters are given in tables A.5.1.7 and A.5.1.8 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used. The PCCPCH RSCP and SFN-CFN observed timed difference of the best cell on the unused frequency shall be reported together with Event 2C reporting. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time "now" with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE during period T2, after the UE has reported event 2C. The starting point of T3 is defined as the end of the last TTI containing the physical channel reconfiguration message.

Table A.5.1.7: General test parameters for inter-frequency handover

Parameter		Unit	Value	Comment
DPCH parameters			DL and UL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2.2 and A.2.1.2
Power Control			On	
Target quality value on DPCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	In the case of multi-frequency network, the UE has a RRC connection on the primary frequency in cell 1.
	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	In the case of multi-frequency network, the UE will handover to the primary frequency in cell 2.
Threshold non used frequency		dBm	-75	Absolute RSCP threshold for event 2C
O		dB	0	cell-individual-offset The value shall be used for all cells in the test.
Hysteresis		dB	0	
Time to Trigger		ms	0	
Filter coefficient			0	
Monitored cell list size			6 TDD neighbours on Channel 1 6 TDD neighbours on Channel 2	
T1		s	5	
T2		s	10	
T3		s	5	

TableA.5.1.8: Cell Specific parameters for inter-frequency handover

Parameter	Unit	Cell 1								
Timeslot Number		**0**			**DwPTS**			**5**		
		T1	T2	T3	T1	T2	T3	T1	T2	T3
UTRA RF Channel Number(Note 3)		Channel 1								
PCCPCH_Ec/Ior	dB	-3						n.a.		
DwPCH_Ec/Ior					0					
DPCH_Ec/Ior	dB	n.a.			n.a.			Note1		n.a.
OCNS_Ec/Ior	dB	-3						Note2		
$\hat{I}_{or}/I_{oc}$	dB	3			3			3		
I_{oc}	dBm/ 1.28 MHz	-70								
PCCPCH_RSCP	dBm	-70			n.a.			n.a.		
Propagation Condition		AWGN								
Parameter	**Unit**	**Cell 2**								
Timeslot Number		**0**			**DwPTS**			**5**		
		T1	T2	T3	T1	T2	T3	T1	T2	T3
UTRA RF Channel Number(Note 3)		Channel 2								
PCCPCH_Ec/Ior	dB	-3						n.a.		
DwPCH_Ec/Ior					0					
DPCH_Ec/Ior	dB	n.a.			n.a.			n.a.		Note1
OCNS_Ec/Ior	dB	-3						Note2		
$\hat{I}_{or}/I_{oc}$	dB	-Inf.	4		-Inf.	4		-Inf.		4
I_{oc}	dBm/ 1.28 MHz	-70								
PCCPCH_RSCP	dBm	-Inf.	-69		n.a.			n.a.		
Propagation Condition		AWGN								

Note 1: The DPCH level is controlled by the power control loop
Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}.
Note 3: In the case of multi-frequency network, the UTRA RF Channel Number is the primary frequency"s channel number.

A.5.1.2.2.1.2 Test Requirements

The UE shall start to transmit the UL DPCH to cell 2 less than 160 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

A.5.1.2.2.2 Scenario 2

This test case is applicable for UE handovers from secondarhy frequency to parimary frequency in the case of multi-frequency network.

A.5.1.2.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the inter-frequency handover delay in CELL_DCH in the case as reported in section 5.1.2.1.2.

The test consists of three successive time periods, with a time duration T1, T2 and T3. The test parameters are given in tables A.5.1.7A and A.5.1.8A below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used. The PCCPCH RSCP and SFN-CFN observed timed difference of the best cell on the unused frequency shall be reported together with Event 2C reporting. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time "now" with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE during period T2, after the UE has reported event 2C. The starting point of T3 is defined as the end of the last TTI containing the physical channel reconfiguration message.

Table A.5.1.7: General test parameters for inter-frequency handover

Parameter		Unit	Value	Comment
DPCH parameters			DL and UL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2.2 and A.2.1.2
Power Control			On	
Target quality value on DPCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	The UE has a RRC connection on the secondary frequency in cell 1.
	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	The UE will handover to the primary frequency in cell 2.
Threshold non used frequency		dBm	-75	Absolute RSCP threshold for event 2C
O		dB	0	cell-individual-offset The value shall be used for all cells in the test.
Hysteresis		dB	0	
Time to Trigger		ms	0	
Filter coefficient			0	
Monitored cell list size			6 TDD neighbours on Channel 1 6 TDD neighbours on Channel 2	
T1		s	5	
T2		s	10	
T3		s	5	

TableA.5.1.8: Cell Specific parameters for inter-frequency handover

Parameter	Unit	Cell 1								
Timeslot Number		**0**			**DwPTS**			**5**		
		T1	T2	T3	T1	T2	T3	T1	T2	T3
UTRA RF Channel Number(Note 3)		Channel 1								
UTRA RF Channel Number(Note 4)		Channel 2								
PCCPCH_Ec/Ior	dB	-3						n.a.		
DwPCH_Ec/Ior					0					
DPCH_Ec/Ior	dB	n.a.			n.a.			Note1		n.a.
OCNS_Ec/Ior	dB	-3						Note2		
$\hat{I}_{or}/I_{oc}$	dB	3			3			3		
I_{oc}	dBm/ 1.28 MHz	-70								
PCCPCH_RSCP	dBm	-70			n.a.			n.a.		
Propagation Condition		AWGN								
Parameter	**Unit**	**Cell 2**								
Timeslot Number		**0**			**DwPTS**			**5**		
		T1	T2	T3	T1	T2	T3	T1	T2	T3
UTRA RF Channel Number(Note 3)		Channel 1								
UTRA RF Channel Number(Note 4)		Channel 2								
PCCPCH_Ec/Ior	dB	-3						n.a.		
DwPCH_Ec/Ior					0					
DPCH_Ec/Ior	dB	n.a.			n.a.			n.a.		Note1
OCNS_Ec/Ior	dB	-3						Note2		
$\hat{I}_{or}/I_{oc}$	dB	-Inf.	4		-Inf.	4		-Inf.		4
I_{oc}	dBm/ 1.28 MHz	-70								
PCCPCH_RSCP	dBm	-Inf.	-69		n.a.			n.a.		
Propagation Condition		AWGN								

Note 1: The DPCH level is controlled by the power control loop
Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}.
Note3: The UTRA RF Channel Number is the primary frequency"s channel number.
Note4: The UTRA RF Channel Number is the secondary frequency"s channel number.

A.5.1.2.2.2 Test Requirements

The UE shall start to transmit the UL DPCH to cell 2 less than 160 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

A.5.1.3 7.68Mcps TDD option

A.5.1.3.1 Handover to intra-frequency cell

A.5.1.3.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the intra-frequency handover delay in CELL_DCH state in the single carrier case reported in section 5.1.2.1.

The test parameters are given in Table A.5.1.9 and A.5.1.10 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G shall be used, and that P-CCPCH RSCP and SFN-CFN observed timed difference shall be reported together with Event 1G. The test consists of three successive time periods,

with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration message with activation time "now" with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE during period T2, after the UE has reported event 1G. The starting point of T3 is definied as the end of the last TTI containing the physical channel reconfiguration message.

The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2. The UL DPCH shall be transmitted in timeslot 12.

Table A.5.1.9: General test parameters for Handover to intra-frequency cell

Parameter		Unit	Value	Comment
DCH parameters			DL and UL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2 and A.2.1
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final condition	Active cell		Cell 2	
HCS			Not used	
O		dB	0	Cell individual offset. This value shall be used for all cells in the test.
Hysteresis		dB	0	
Time to Trigger		ms	0	
Filter coefficient			0	
Monitored cell list size			6 TDD neighbours on Channel 1	
T1		s	10	
T2		s	10	
T3		s	10	

Table A.5.1.10: Cell specific test parameters for Handover to intra-frequency cell

Parameter	Unit	Cell 1						Cell 2					
DL timeslot number		0			4			0			5		
		T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
UTRA RF Channel Number		Channel 1						Channel 1					
PCCPCH_Ec/Ior	dB	-3			n.a.			-3			n.a.		
SCH_Ec/Ior	dB	-9			n.a.			-9			n.a.		
SCH_t_{offset}	dB	0			n.a.			5			n.a.		
DPCH_Ec/Ior	dB	n.a.			Note 1		n.a.	n.a.			n.a.		Note 1
OCNS_Ec/Ior	dB	-3,12			Note 2		n.a.	n.a.	-3,12		n.a.		Note 2
$\hat{I}_{or}/I_{oc}$	dB	1						-Inf.	3		-Inf.		3
PCCPCH RSCP	dBm	-72			n.a.			-Inf.	-70		n.a.		
I_{oc}	dBm/ 7,68 MHz	-70											
Propagation Condition		AWGN											
Note 1: The DPCH level is controlled by the power control loop Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Ior .													

A.5.1.3.1.2 Test Requirements

The UE shall start to transmit the UL DPCH to Cell 2 less than 160 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

A.5.1.3.2 Handover to inter-frequency cell

A.5.1.3.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the inter-frequency handover delay in CELL_DCH state in the dual carrier case reported in section 5.1.2.1.

The test consists of two successive time periods, with a time duration T1 and T2. The test parameters are given in tables A.5.1.11 and A.5.1.12 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used. The PCCPCH RSCP and SFN-CFN observed time difference of the best cell on the unused frequency shall be reported together with Event 2C reporting. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration message with activation time "now" with one active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE during period T2, after the UE has reported event 2C. The starting point of T3 is defined as the end of the last TTI containing the physical channel reconfiguration message.

The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2. The UL DPCH shall be transmitted in timeslot 12.

Table A.5.1.11: General test parameters for Handover to inter-frequency cell

Parameter		Unit	Value	Comment
DCH parameters			DL and UL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2 and A.2.1
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final condition	Active cell		Cell 2	
HCS			Not used	
O		dB	0	Cell individual offset. This value shall be used for all cells in the test.
Hysteresis		dB	0	Hysteresis parameter for event 2C
Time to Trigger		ms	0	
Threshold non-used frequency		dBm	-80	Applicable for Event 2C
Filter coefficient			0	
Monitored cell list size			6 TDD neighbours on Channel 1 6 TDD neighbours on Channel 2	
T_{SI}		s	1.28	The value shall be used for all cells in the test.
T1		s	10	
T2		s	10	
T3		s	10	

TableA.5.1.12: Cell Specific parameters for Handover to inter-frequency cell

Parameter	Unit	Cell 1						Cell 2					
DL timeslot number		**0**			**4**			**2**			**5**		
		T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
UTRA RF Channel Number		Channel 1						Channel 2					
PCCPCH_Ec/Ior	dB	-3			n.a.			-3			n.a.		
SCH_Ec/Ior	dB	-9			n.a.			-9			n.a.		
SCH_t_{offset}	dB	0			n.a.			5			n.a.		
DPCH_Ec/Ior	dB	n.a.			Note 1		n.a.	n.a.			n.a.		Note 1
OCNS_Ec/Ior	dB	-3,12			Note 2		n.a.	n.a.	-3,12		n.a.		Note 2
$\hat{I}_{or}/I_{oc}$	dB	1						-Inf.	7		-Inf.		7
PCCPCH RSCP	dBm	-72			n.a.			-Inf.	-66		n.a.		
I_{oc}	dBm/ 7,68 MHz	-70											
Propagation Condition		AWGN											
Note 1: The DPCH level is controlled by the power control loop Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Ior .													

A.5.1.3.2.2 Test Requirements

The UE shall start to transmit the UL DPCH to Cell 2 less than 160 ms from the beginning of time period T2.

The rate of correct handovers observed during repeated tests shall be at least 90%.

A.5.2 TDD/FDD Handover

A.5.2.1 3.84 Mcps TDD option

A.5.2.1.1 Test purpose and Environment

The purpose of this test is to verify the requirement for the TDD/FDD handover delay in CELL_DCH state reported in section 5.2.2.1.

The test parameters are given in Table A.5.2.1, A.5.2.2 and A.5.2.3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G and 2B shall be used. The CPICH_RSCP of the best cell on the unused frequency shall be reported together with Event 2B reporting. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration message with activation time "now" with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE during period T2, after the UE has reported event 2B. The starting point of T3 is defined as the end of the last TTI containing the physical channel reconfiguration message.

Table A.5.2.1: General test parameters for TDD/FDD handover

Parameter		Unit	Value	Comment
DCH parameters			DL and UL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 annex A.2.2 and TS 25.101 annex A
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	TDD cell
	Neighbour cell		Cell 2	FDD cell
Final condition	Active cell		Cell 2	FDD cell
HCS			Not used	
O		dB	0	Cell individual offset. This value shall be used for all cells in the test.
Hysteresis		dB	3	Hysteresis parameter for event 2B
Time to Trigger		ms	0	
Absolute threshold used frequency		dBm	-71	Applicable for Event 2B
Threshold non-used frequency		dBm	-80	Applicable for Event 2B
W non-used frequency			1	Applicable for Event 2B
Filter coefficient			0	
Monitored cell list size			6 TDD neighbours on Channel 1 6 FDD neighbours on Channel 2	
T_{SI}		s	1.28	The value shall be used for all cells in the test.
T1		s	5	
T2		s	15	
T3		s	5	

Table A.5.2.2: Cell 1 specific test parameters for TDD/FDD handover

Parameter	Unit	Cell 1					
DL timeslot number		**0**			**2**		
		T1	T2	T3	T1	T2	T3
UTRA RF Channel Number		Channel 1					
PCCPCH_Ec/Ior	dB	-3			n.a.		
SCH_Ec/Ior	dB	-9			n.a.		
SCH_t_{offset}	dB	0			n.a.		
DPCH_Ec/Ior	dB	n.a.			Note 1		n.a.
OCNS_Ec/Ior	dB	-3,12			Note 2		n.a.
$\hat{I}_{or}/I_{oc}$	dB	5	-1		5	-1	
PCCPCH RSCP	dBm	-68	-74		n.a.		
I_{oc}	dBm/ 3,84 MHz	-70					
Propagation Condition		AWGN					

Note 1: The DPCH level is controlled by the power control loop
Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Ior .

Table A.5.2.3: Cell 2 specific test parameters for TDD/FDD handover

Parameter	Unit	Cell 2	
		T1, T2	T3
CPICH_Ec/Ior	dB	-10	
PCCPCH_Ec/Ior	dB	-12	
SCH_Ec/Ior	dB	-12	
PICH_Ec/Ior	dB	-15	
DPCH_Ec/Ior	dB	n.a.	Note 1
OCNS_Ec/Ior	dB	-0.941	Note 2
CPICH_RSCP	dBm	-83	-77
$\hat{I}_{or}/I_{oc}$	dB	-3	3
I_{oc}	dBm/3.84 MHz	-70	
Propagation Condition		AWGN	
Note 1: The DPCH level is controlled by the power control loop Note 2 : The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}.			

A.5.2.1.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 220 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

A.5.2.2 1.28 Mcps TDD option

A.5.2.2.1 Test purpose and Environment

The purpose of this test is to verify the requirement for the TDD/FDD handover delay in CELL_DCH state reported in section 5.2.2.2.

The test parameters are given in Table A.5.2.4, A.5.2.5 and A.5.2.6 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G and 2B shall be used. The CPICH_RSCP of the best cell on the unused frequency shall be reported together with Event 2B reporting. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration message with activation time "now" with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE during period T2, after the UE has reported event 2B. The starting point of T3 is defined as the end of the last TTI containing the physical channel reconfiguration message.

Table A.5.2.4: General test parameters for TDD/FDD handover

Parameter		Unit	Value	Comment
DCH parameters			DL and UL Reference Measurement Channels 12.2 kbps	As specified in TS 25.102 annex A and TS 25.101 annex A
Power Control			On	
Initial conditions	Active cell		Cell 1	TDD cell
	Neighbour cell		Cell 2	FDD cell
Final condition	Active cell		Cell 2	FDD cell
O		dB	0	Cell individual offset. This value shall be used for all cells in the test.
Hysteresis		dB	3	Hysteresis parameter for event 2B
Time to Trigger		ms	0	
Absolute threshold used frequency		dBm	-71	Applicable for Event 2B
Threshold non-used frequency		dBm	-80	Applicable for Event 2B
W non-used frequency			1	Applicable for Event 2B
Filter coefficient			0	
Monitored cell list size			6 TDD neighbours on Channel 1 6 FDD neighbours on Channel 2	
T_{SI}		s	1.28	The value shall be used for all cells in the test.
T1		s	5	
T2		s	15	
T3		s	5	

Table A.5.2.5: Cell 1 specific test parameters for TDD/FDD handover

Parameter	Unit	Cell 1					
Timeslot number		**0**			**5**		
		T1	T2	T3	T1	T2	T3
UTRA RF Channel Number(Note3		Channel 1					
PCCPCH_Ec/Ior	dB	-3			n.a.		
DPCH_Ec/Ior	dB	n.a.			Note 1		n.a.
OCNS_Ec/Ior	dB	-3			Note 2		n.a.
$\hat{I}_{or}/I_{oc}$	dB	5	-1		5	-1	
PCCPCH RSCP	dBm	-68	-74		n.a.		
I_{oc}	dBm/ 1.28 MHz	-70					
Propagation Condition		AWGN					

Note 1: The DPCH level is controlled by the power control loop
Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Ior.
Note3: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test.

Table A.5.2.6: Cell 2 specific test parameters for TDD/FDD handover

Parameter	Unit	Cell 2		
		T1	T2	T3
CPICH_Ec/Ior	dB	-10		
PCCPCH_Ec/Ior	dB	-12		
SCH_Ec/Ior	dB	-12		
PICH_Ec/Ior	dB	-15		
DPCH_Ec/Ior	dB	n.a.		Note 1
OCNS_Ec/Ior	dB	-0.941		Note 2
CPICH_RSCP	dBm	-Inf	-75	
$\hat{I}_{or}/I_{oc}$	dB	-Inf	5	
I_{oc}	dBm/ 3.84 MHz	-70		
Propagation Condition		AWGN		
Note 1: The DPCH level is controlled by the power control loop Note 2 : The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}.				

A.5.2.2.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 220 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

A.5.2.3 7.68 Mcps TDD option

A.5.2.3.1 Test purpose and Environment

The purpose of this test is to verify the requirement for the TDD/FDD handover delay in CELL_DCH state reported in section 5.2.2.1.

The test parameters are given in Table A.5.2.7, A.5.2.8 and A.5.2.9 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G and 2B shall be used. The CPICH_RSCP of the best cell on the unused frequency shall be reported together with Event 2B reporting. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration message with activation time "now" with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE during period T2, after the UE has reported event 2B. The starting point of T3 is defined as the end of the last TTI containing the physical channel reconfiguration message.

Table A.5.2.7: General test parameters for TDD/FDD handover

Parameter		Unit	Value	Comment
DCH parameters			DL and UL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 annex A.2.2 and TS 25.101 annex A
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	TDD cell
	Neighbour cell		Cell 2	FDD cell
Final condition	Active cell		Cell 2	FDD cell
HCS			Not used	
O		dB	0	Cell individual offset. This value shall be used for all cells in the test.
Hysteresis		dB	3	Hysteresis parameter for event 2B
Time to Trigger		ms	0	
Absolute threshold used frequency		dBm	-71	Applicable for Event 2B
Threshold non-used frequency		dBm	-80	Applicable for Event 2B
W non-used frequency			1	Applicable for Event 2B
Filter coefficient			0	
Monitored cell list size			6 TDD neighbours on Channel 1 6 FDD neighbours on Channel 2	
T_{SI}		s	1.28	The value shall be used for all cells in the test.
T1		s	5	
T2		s	15	
T3		s	5	

Table A.5.2.8: Cell 1 specific test parameters for TDD/FDD handover

Parameter	Unit	Cell 1					
DL timeslot number		**0**			**2**		
		T1	T2	T3	T1	T2	T3
UTRA RF Channel Number		Channel 1					
PCCPCH_Ec/Ior	dB	-3			n.a.		
SCH_Ec/Ior	dB	-9			n.a.		
SCH_t_{offset}	dB	0			n.a.		
DPCH_Ec/Ior	dB	n.a.			Note 1		n.a.
OCNS_Ec/Ior	dB	-3,12			Note 2		n.a.
$\hat{I}_{or}/I_{oc}$	dB	5	-1		5	-1	
PCCPCH RSCP	dBm	-68	-74		n.a.		
I_{oc}	dBm/ 7,68 MHz	-70					
Propagation Condition		AWGN					

Note 1: The DPCH level is controlled by the power control loop
Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}

Table A.5.2.9: Cell 2 specific test parameters for TDD/FDD handover

Parameter	Unit	Cell 2	
		T1, T2	T3
CPICH_Ec/Ior	dB	-10	
PCCPCH_Ec/Ior	dB	-12	
SCH_Ec/Ior	dB	-12	
PICH_Ec/Ior	dB	-15	
DPCH_Ec/Ior	dB	n.a.	Note 1
OCNS_Ec/Ior	dB	-0.941	Note 2
CPICH_RSCP	dBm	-83	-77
$\hat{I}_{or}/I_{oc}$	dB	-3	3
I_{oc}	dBm/7.68 MHz	-70	
Propagation Condition		AWGN	
Note 1: The DPCH level is controlled by the power control loop Note 2 : The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}.			

A.5.2.3.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 220 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

A.5.3 TDD/GSM Handover

A.5.3.1 Test Purpose and Environment

A.5.3.1.1 3.84 Mcps TDD option

The purpose of this test is to verify the requirement for the UTRA TDD to GSM handover delay reported in section 5.4.2.1.

The test parameters are given in Tables A.5.3.1, A.5.3.2 and A.5.3.3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 3C shall be used. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a HANDOVER FROM UTRAN COMMAND message with activation time "now" with one active cell, cell 2. The HANDOVER FROM UTRAN COMMAND message shall be sent to the UE during period T2. The starting point of T3 is defined as the end of the last TTI containing the HO command. In the GSM Handover command contained in this message, IE starting time shall not be included.

Cell 1 is a UTRA TDD cell and cell 2 is a GSM cell. The Beacon timeslot shall be transmitted in timeslot 0 for cell 1 and no second Beacon timeslot shall be provided for cell 1. The DL DPCH shall be transmitted in timeslot 1 and the UL DPCH shall be transmitted in timeslot 3.

Table A.5.3.1: General test parameters for TDD/GSM handover

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2
Power Control		On	
Target quality value on DTCH	BLER	0.01	
Initial conditions	Active cell	Cell 1	UTRA TDD cell
	Neighbour cell	Cell 2	GSM cell
Final condition	Active cell	Cell 2	GSM cell
Inter-RAT measurement quantity		GSM carrier RSSI	
BSIC verification required		Required	
Threshold other system	dBm	-80	Absolute GSM carrier RSSI threshold for Event 3C.
Hysteresis	dB	0	
Time to Trigger	ms	0	
Filter coefficient		0	
Monitored cell list size		12 TDD neighbours on Channel 1 6 GSM neighbours including ARFCN 1	Measurement control information is sent before the start of time period T1.
$T_{identify\ abort}$	s	5	As specified in section 8.1.2.5
$T_{reconfirm\ abort}$	s	5	As specified in section 8.1.2.5
T1	s	10	
T2	s	10	
T3	s	10	

Table A.5.3.2: Cell 1 specific test parameters for TDD/GSM handover

Parameter	Unit	Cell 1					
DL timeslot number		**0**			**1**		
		T1	**T2**	**T3**	**T1**	**T2**	**T3**
UTRA RF Channel Number		Channel 1					
PCCPCH_Ec/Ior	dB	-3			n.a.		
SCH_Ec/Ior	dB	-9			n.a.		
SCH_t_{offset}	dB	0			n.a.		
DPCH_Ec/Ior	dB	n.a.			Note 1		n.a.
OCNS_Ec/Ior	dB	-3,12			Note 2		n.a.
$\hat{I}_{or}/I_{oc}$	dB	6			6		
PCCPCH RSCP	dBm	-68			n.a.		
I_{oc}	dBm/ 3,84 MHz	-70					
Propagation Condition		AWGN					
Note 1: The DPCH level is controlled by the power control loop Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Ior .							

Table A.5.3.3: Cell 2 specific test parameters for TDD/GSM handover

Parameter	Unit	Cell 2	
		T1	**T2, T3**
Absolute RF Channel Number		ARFCN 1	
RXLEV	dBm	-85	-75

A.5.3.1.2 1.28Mcps TDD option

The purpose of this test is to verify the requirement for the UTRA TDD to GSM handover delay reported in section 5.3.2.

The test parameters are given in Tables A.5.3.4, A.5.3.5 and A.5.3.6 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 3C shall be used. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a HANDOVER FROM UTRAN COMMAND message with activation time "now" with one active cell, cell 2. The HANDOVER FROM UTRAN COMMAND message shall be sent to the UE during period T2. The starting point of T3 is defined as the end of the last TTI containing the HO command. In the GSM Handover command contained in this message, the IE starting time shall not be included.

Cell 1 is a UTRA TDD cell and cell 2 is a GSM cell.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 2.

Table A.5.3.4: General test parameters for TDD/GSM handover

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A
Power Control		On	
Target quality value on DTCH	BLER	0.01	
Initial conditions	Active cell	Cell 1	UTRA TDD cell
	Neighbour cell	Cell 2	GSM cell
Final condition	Active cell	Cell 2	GSM cell
Inter-RAT measurement quantity		GSM carrier RSSI	
BSIC verification required		Required	
Threshold other system	dBm	-80	Absolute GSM carrier RSSI threshold for Event 3C.
Hysteresis	dB	0	
Time to Trigger	ms	0	
Filter coefficient		0	
Monitored cell list size		12 TDD neighbours on Channel 1 6 GSM neighbours including ARFCN 1	Measurement control information is sent before the start of time period T1.
$T_{identify\ abort}$	s	5	As specified in section 8.1A.2.5
$T_{reconfirm\ abort}$	s	5	As specified in section 8.1A.2.5
T1	s	10	
T2	s	10	
T3	s	10	

Table A.5.3.5: Cell 1 specific test parameters for TDD/GSM handover

Parameter	Unit	Cell 1					
DL timeslot number		0			DwPTS		
		T1	T2	T3	T1	T2	T3
UTRA RF Channel Number (NOTE)		Channel 1					
PCCPCH_Ec/Ior	dB	-3					
DwPCH_Ec/Ior	dB				0		
OCNS_Ec/Ior	dB	-3					
$\hat{I}_{or}/I_{oc}$	dB	5			5		
I_{oc}	dBm/ 1.28 MHz	-70					
Propagation Condition		AWGN					
NOTE: In the case of multi-frequency network,the UTRA RF Channel Number can be set for the primary frequency in this test.							

Table A.5.3.6: Cell 2 specific test parameters for TDD/GSM handover

Parameter	Unit	Cell 2	
		T1	T2, T3
Absolute RF Channel Number		ARFCN 1	
RXLEV	dBm	-85	-75

A.5.3.1.3 7.68 Mcps TDD option

The purpose of this test is to verify the requirement for the UTRA TDD to GSM handover delay reported in section 5.4.2.1.

The test parameters are given in Tables A.5.3.7, A.5.3.8 and A.5.3.9 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 3C shall be used. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a HANDOVER FROM UTRAN COMMAND message with activation time "now" with one active cell, cell 2. The HANDOVER FROM UTRAN COMMAND message shall be sent to the UE during period T2. The starting point of T3 is defined as the end of the last TTI containing the HO command. In the GSM Handover command contained in this message, IE starting time shall not be included.

Cell 1 is a UTRA TDD cell and cell 2 is a GSM cell. The Beacon timeslot shall be transmitted in timeslot 0 for cell 1 and no second Beacon timeslot shall be provided for cell 1. The DL DPCH shall be transmitted in timeslot 1 and the UL DPCH shall be transmitted in timeslot 3.

Table A.5.3.7: General test parameters for TDD/GSM handover

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2
Power Control		On	
Target quality value on DTCH	BLER	0.01	
Initial conditions	Active cell	Cell 1	UTRA TDD cell
	Neighbour cell	Cell 2	GSM cell
Final condition	Active cell	Cell 2	GSM cell
Inter-RAT measurement quantity		GSM carrier RSSI	
BSIC verification required		Required	
Threshold other system	dBm	-80	Absolute GSM carrier RSSI threshold for Event 3C.
Hysteresis	dB	0	
Time to Trigger	ms	0	
Filter coefficient		0	
Monitored cell list size		12 TDD neighbours on Channel 1 6 GSM neighbours including ARFCN 1	Measurement control information is sent before the start of time period T1.
$T_{identify\ abort}$	s	5	As specified in section 8.1.2.5
$T_{reconfirm\ abort}$	s	5	As specified in section 8.1.2.5
T1	s	10	
T2	s	10	
T3	s	10	

Table A.5.3.8: Cell 1 specific test parameters for TDD/GSM handover

Parameter	Unit	Cell 1					
DL timeslot number		**0**			**1**		
		T1	**T2**	**T3**	**T1**	**T2**	**T3**
UTRA RF Channel Number		Channel 1					
PCCPCH_Ec/Ior	dB	-3			n.a.		
SCH_Ec/Ior	dB	-9			n.a.		
SCH_t_{offset}	dB	0			n.a.		
DPCH_Ec/Ior	dB	n.a.			Note 1		n.a.
OCNS_Ec/Ior	dB	-3,12			Note 2		n.a.
$\hat{I}_{or}/I_{oc}$	dB	6			6		
PCCPCH RSCP	dBm	-68			n.a.		
I_{oc}	dBm/ 7,68 MHz	-70					
Propagation Condition		AWGN					
Note 1: The DPCH level is controlled by the power control loop Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Ior .							

Table A.5.3.9: Cell 2 specific test parameters for TDD/GSM handover

Parameter	Unit	Cell 2	
		T1	**T2, T3**
Absolute RF Channel Number		ARFCN 1	
RXLEV	dBm	-85	-75

A.5.3.2 Test Requirements

A.5.3.2.1 3.84 Mcps TDD option

The UE shall begin to send access bursts on the new DCCH of the target cell less than 90 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

A.5.3.2.2 1.28 Mcps TDD option

The UE shall begin to send access bursts on the new DCCH of the target cell less than 90 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

A.5.3.2.3 7.68 Mcps TDD option

The UE shall begin to send access bursts on the new DCCH of the target cell less than 90 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

A.5.4 Cell Re-selection in CELL_FACH

A.5.4.1 3.84 Mcps TDD option

A.5.4.1.1 Scenario 1: Re-selection to intra-frequency TDD cell

A.5.4.1.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the cell re-selection delay in CELL_FACH state in the single carrier case reported in section 5.4.2.1.1. The test parameters are given in Tables A.5.4.1 to A.5.4.4.

Table A.5.4.1: General test parameters for Cell Re-selection in CELL_FACH

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-102	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value		-	1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1,28	The value shall be used for all cells in the test.
T1		s	15 (initial), 5 (repetition)	
T2		s	5	

Table A.5.4.2: Physical channel parameters for S-CCPCH.

Parameter	Unit	Level
Channel bit rate	Kbps	24,4
Channel symbol rate	Ksps	12,2
Slot Format #	-	0
Frame allocation	-	Continuous frame allocation
Midamble allocation	-	Default Midamble

Table A.5.4.3: Transport channel parameters for S-CCPCH

Parameter	FACH
Transport Channel Number	1
Transport Block Size	240
Transport Block Set Size	240
Transmission Time Interval	20 ms
Type of Error Protection	Convolutional Coding
Coding Rate	½
Rate Matching attribute	256
Size of CRC	16

Table A.5.4.4: Cell specific test parameters for Cell Re-selection in CELL_FACH

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5	10	10	10	10
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3

OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	9	7	9	7	7	9	7	9	-1	-1	-1	-1
PCCPCH RSCP	dBm	-64	-66			-66	-64			-74	-74		
Qoffset1$_{s,n}$	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1,C6:0				C2, C1: 0; C2, C3:0; C2,C4:0 C2, C5: 0; C2, C6:0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5: 0; C3, C6:0			
Qhyst1$_s$	dB	0				0				0			
Treselection		0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
FACH measurement occasion info		not sent				not sent				not sent			
I_{oc}	dBm/ 3,84 MHz	-70											
Propagation Condition		AWGN											
		Cell 4				**Cell 5**				**Cell 6**			
Timeslot		**0**		**8**		**0**		**8**		**0**		**8**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t$_{offset}$		15	15	15	15	20	20	20	20	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74		
Qoffset**1**$_{s,n}$	dB	C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0				C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0			
Qhyst1$_s$	dB	0				0				0			
Treselection		0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
FACH measurement occasion info		not sent				not sent				not sent			
I_{oc}	dBm/ 3,84 MHz	-70											
Propagation Condition		AWGN											

NOTE: S-CCPCH shall not be located in TS0.

A.5.4.1.1.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the CELL UPDATE message with cause value "cell reselection" in cell 2.

The cell re-selection delay shall be less than 2,5 s.

The rate of correct cell re-selections observed during repeated tests shall be at least 90%.

A.5.4.1.2 Scenario 2: Re-selection to inter-frequency TDD cell

A.5.4.1.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the cell re-selection delay in CELL_FACH state in the multi carrier case reported in section 5.4.2.1.2. The test parameters are given in Tables A.5.4.5 to A.5.4.8.

Table A.5.4.5: General test parameters for Cell Re-selection in CELL_FACH

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-102	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value		-	1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1,28	The value shall be used for all cells in the test.
T1		s	15 (initial), 5 (repetition)	
T2		s	5	

Table A.5.4.6: Physical channel parameters for S-CCPCH.

Parameter	Unit	Level
Channel bit rate	Kbps	24,4
Channel symbol rate	Ksps	12,2
Slot Format #	-	0
Frame allocation	-	Continuous frame allocation
Midamble allocation	-	Default Midamble

Table A.5.4.7: Transport channel parameters for S-CCPCH

Parameter	FACH
Transport Channel Number	1
Transport Block Size	240
Transport Block Set Size	240
Transmission Time Interval	20 ms
Type of Error Protection	Convolutional Coding
Coding Rate	½
Rate Matching attribute	256
Size of CRC	16

Table A.5.4.8: Cell specific test parameters for Cell Re-selection in CELL_FACH

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 2				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5	10	10	10	10
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	9	3	9	3	3	9	3	9	-1	-1	-1	-1
PCCPCH RSCP	dBm	-64	-70			-70	-64			-74	-74		
Qoffset1$_{s,n}$	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1,C6:0				C2, C1: 0; C2, C3:0; C2,C4:0 C2, C5: 0; C2, C6:0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5: 0; C3, C6:0			
Qhyst1$_s$	dB	0				0				0			
Treselection		0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
Sintersearch	dB	not sent				not sent				not sent			
FACH measurement occasion info		not sent				not sent				not sent			
Inter-frequency TDD measurement indicator		TRUE				TRUE				TRUE			
I_{oc}	dBm/ 3,84 MHz	-70											
Propagation Condition		AWGN											
		Cell 4				**Cell 5**				**Cell 6**			
Timeslot		**0**		**8**		**0**		**8**		**0**		**8**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 2				Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		15	15	15	15	20	20	20	20	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74		
Qoffset**1**$_{s,n}$	dB	C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0				C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0			
Qhyst1$_s$	dB	0				0				0			
Treselection		0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
Sintersearch	dB	not sent				not sent				not sent			
FACH measurement occasion info		not sent				not sent				not sent			
Inter-frequency TDD measurement indicator		TRUE				TRUE				TRUE			
I_{oc}	dBm/ 3,84 MHz	-70											
Propagation Condition		AWGN											
NOTE: S-CCPCH shall not be located in TS0.													

A.5.4.1.2.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the CELL UPDATE message with cause value "cell reselection" in cell 2.

The cell re-selection delay shall be less than 3 s.

The rate of correct cell re-selections observed during repeated tests shall be at least 90%.

A.5.4.2 1.28 Mcps TDD option

A.5.4.2.1 Re-selection to intra-frequency TDD cell

A.5.4.2.1.1 Test purpose and Environment

The purpose of this test is to verify the requirement for the cell re-selection delay in CELL_FACH state in the case reported in section 5.4.3.2.1.

The test parameters are given in Tables A.5.4.9to A.5.4.12

Table A.5.4.9: General test parameters for Cell Re-selection in CELL_FACH

Parameter		Unit	Value	Comment
initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-103	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1.28	The value shall be used for all cells in the test.
T1		s	15 (initial), 5 (repetition)	
T2		s	5	

Table A.5.4.10: Physical channel parameters for S-CCPCH.

Parameter	Unit	Level
Channel bit rate	kbps	35.2
Channel symbol rate	ksps	17.6
Slot Format #	-	0; 2
Frame allocation	-	Continuous frame allocation
Midamble allocation	-	Common Midamble

Table A.5.4.11: Transport channel parameters for S-CCPCH

Parameter	FACH
Transport Channel Number	1
Transport Block Size	240
Transport Block Set Size	240
Transmission Time Interval	20 ms
Type of Error Protection	Convolution Coding
Coding Rate	½
Rate Matching attribute	256
Size of CRC	16

Table A.5.4.12: Cell specific test parameters for Cell Re-selection in CELL_FACH

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		0		DWPTS		0		DWPTS		0		DWPTS	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number (NOTE 2)		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/Ior	dB			0	0			0	0			0	0
OCNS_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
$\hat{I}_{or}/I_{oc}$	dB	10	7	10	7	7	10	7	10	-1	-1	-1	-1
PCCPCH RSCP	dBm	-63	-66			-66	-63			-74	-74		
Qoffset1$_{s,n}$	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1,C6:0				C2, C1: 0; C2, C3:0; C2,C4:0 C2, C5: 0; C2, C6:0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5: 0; C3, C6:0			
Qhyst1$_s$	dB	0				0				0			
Treselection		0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
FACH measurement occasion info		not sent				not sent				not sent			
		Cell 4				**Cell 5**				**Cell 6**			
Timeslot		**0**		**DWPTS**		**0**		**DWPTS**		**0**		**DWPTS**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number (NOTE 2)		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/Ior	dB			0	0			0	0			0	0
OCNS_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
$\hat{I}_{or}/I_{oc}$	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74		
Qoffset**1**$_{s,n}$	dB	C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0				C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0			
Qhyst1$_s$	dB	0				0				0			
Treselection		0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
FACH measurement occasion info		not sent				not sent				not sent			
I_{oc}	dBm/1.28 MHz	-70											
Propagation Condition		AWGN											

NOTE 1: S-CCPCH is located in an other downlink TS than TS0.
NOTE 2: In the case of multi-frequency network,the UTRA RF Channel Number is the primary frequency"s channel number.

A.5.4.2.1.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send SYNCH-UL sequence in the UpPTS for sending the CELL UPDATE message with cause value "cell reselection" in cell 2.

The cell re-selection delay shall be less than 1.6 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE:

The cell re-selection delay can be expressed as:

$$T_{reselection,\,intra} = T_{Measurement\ Period\ \ Intra} + T_{IU} + 20 + T_{SI} + T_{RA}\ \text{ms}$$

where:

$T_{Measurement\ Period\ Intra}$ Specified in 8.4A.2.2.2 gives 200ms for this test case.

T_{SI} Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.

T_{RA} The additional delay caused by the random access procedure described in TS25.224. In this test case the persistence value is 1 thus T_{RA} is set to 35ms in the test case.

This gives a total of 1.545s, allow 1.6s in the test case.

A.5.4.2.2 Re-selection to inter-frequency TDD cell

A.5.4.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the cell re-selection delay in CELL_FACH state in section 5.4.3.2.2. The test parameters are given in Tables A.5.4.13 to A.5.4.16

Table A.5.4.13: General test parameters for Cell Re-selection in CELL_FACH

Parameter		Unit	Value	Comment
initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-103	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1.28	The value shall be used for all cells in the test.
T1		s	15 (initial), 5 (repetition)	
T2		s	5	

Table A.5.4.14: Physical channel parameters for S-CCPCH.

Parameter	Unit	Level
Channel bit rate	kbps	35.2
Channel symbol rate	ksps	17.6
Slot Format #	-	0; 2
Frame allocation	-	Continuous frame allocation
Midamble allocation	-	Common Midamble

Table A.5.4.15: Transport channel parameters for S-CCPCH

Parameter	FACH
Transport Channel Number	1
Transport Block Size	240
Transport Block Set Size	240
Transmission Time Interval	20 ms
Type of Error Protection	Convolution Coding
Coding Rate	½
Rate Matching attribute	256
Size of CRC	16

Table A.5.4.16: Cell specific test parameters for Cell re-selection in CELL_FACH state

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		0		DWPTS		0		DWPTS		0		DWPTS	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number (NOTE 2)		Channel 1				Channel 2				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/Ior	dB			0	0			0	0			0	0
OCNS_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
$\hat{I}_{or}/I_{oc}$	dB	10	4	10	4	4	10	4	10	-1	-1	-1	-1
PCCPCH RSCP	dBm	-63	-69			-69	-63			-74	-74		
Qoffset1$_{s,n}$	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1,C6:0				C2, C1: 0; C2, C3:0; C2,C4:0 C2, C5: 0; C2:C6:0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5: 0; C3:C6:0			
Qhyst1$_s$	dBm	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
Sintersearch	dB	not sent				not sent				not sent			
FACH measurement occasion info		not sent				not sent				not sent			
FACH measurement occasion cycle length		4				4				4			
Inter-frequency TDD measurement indicator		TRUE				TRUE				TRUE			
Inter-frequency FDD measurement indicator		FALSE				FALSE				FALSE			
		Cell 4				**Cell 5**				**Cell 6**			
Timeslot		**0**		**DWPTS**		**0**		**DWPTS**		**0**		**DWPTS**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number (NOTE 2)		Channel 1				Channel 2				Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/Ior	dB			0	0			0	0			0	0
OCNS_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
$\hat{I}_{or}/I_{oc}$	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74		
Qoffset1$_{s,n}$	dB	C4, C1: 0; C4, C2:0; C4,C3:0; C4, C5:0; C4:C6:0				C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5:C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6:C5:0			
Qhyst1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
Sintersearch	dB	not sent				not sent				not sent			
FACH measurement occasion info		not sent				not sent				not sent			
FACH measurement occasion cycle length		4				4				4			
Inter-frequency TDD measurement indicator		TRUE				TRUE				TRUE			
Inter-frequency FDD measurement indicator		FALSE				FALSE				FALSE			
I_{oc}	dBm/ 1.28 MHz	-70											
Propagation Condition		AWGN											

NOTE 1: S-CCPCH is located in an other downlink TS than TS0.
NOTE 2: In the case of multi-frequency network,the UTRA RF Channel Number is the primary frequency"s channel number.

A.5.4.2.2.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send SYNCH-UL sequence in the UpPTS for sending the CELL UPDATE message with cause value "cell reselection" in cell 2.

The cell re-selection delay shall be less than 2 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$T_{reselection,\,inter} = T_{measurement\ inter} + T_{IU} + 20 + T_{SI} + T_{RA}\ \text{ms},$$

where:

$T_{measurement\ inter}$ is specified in 8.4A.2.3.2 gives 480ms for this test case.

T_{SI} Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.

T_{RA} The additional delay caused by the random access procedure described in TS25.224. In this test case the persistence value is 1 thus T_{RA} is set to 35ms in the test case.

This gives a total of 1.825s, allow 1.9s in the test case.

A.5.4.3 7.68 Mcps TDD option

A.5.4.3.1 Scenario 1: TDD/TDD cell re-selection single carrier case

A.5.4.3.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the cell re-selection delay in CELL_FACH state in the single carrier case reported in section 5.4.4.1.1. The test parameters are given in Tables A.5.4.17 to A.5.4.20.

Table A.5.4.17: General test parameters for Cell Re-selection in CELL_FACH

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-102	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value		-	1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1,28	The value shall be used for all cells in the test.
T1		s	15 (initial), 5 (repetition)	
T2		s	5	

Table A.5.4.18: Physical channel parameters for S-CCPCH.

Parameter	Unit	Level
Channel bit rate	Kbps	24,4
Channel symbol rate	Ksps	12,2
Slot Format #	-	0
Frame allocation	-	Continuous frame allocation
Midamble allocation	-	Default Midamble

Table A.5.4.19: Transport channel parameters for S-CCPCH

Parameter	FACH
Transport Channel Number	1
Transport Block Size	240
Transport Block Set Size	240
Transmission Time Interval	20 ms
Type of Error Protection	Convolutional Coding
Coding Rate	½
Rate Matching attribute	256
Size of CRC	16

Table A.5.4.20: Cell specific test parameters for Cell Re-selection in CELL_FACH

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5	10	10	10	10
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3

OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	9	7	9	7	7	9	7	9	-1	-1	-1	-1
PCCPCH RSCP	dBm	-64	-66			-66	-64			-74	-74		
Qoffset1$_{s,n}$	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1,C6:0				C2, C1: 0; C2, C3:0; C2,C4:0 C2, C5: 0; C2, C6:0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5: 0; C3, C6:0			
Qhyst1$_s$	dB	0				0				0			
Treselection		0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
FACH measurement occasion info		not sent				not sent				not sent			
I_{oc}	dBm/7, 68 MHz	-70											
Propagation Condition		AWGN											
		Cell 4				**Cell 5**				**Cell 6**			
Timeslot		**0**		**8**		**0**		**8**		**0**		**8**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t$_{offset}$		15	15	15	15	20	20	20	20	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74		
Qoffset**1**$_{s,n}$	dB	C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0				C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0			
Qhyst1$_s$	dB	0				0				0			
Treselection		0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
FACH measurement occasion info		not sent				not sent				not sent			
I_{oc}	dBm/7, 68 MHz	-70											
Propagation Condition		AWGN											

NOTE: S-CCPCH shall not be located in TS0.

A.5.4.3.1.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the CELL UPDATE message with cause value "cell reselection" in cell 2.

The cell re-selection delay shall be less than 2,5 s.

The rate of correct cell re-selections observed during repeated tests shall be at least 90%.

A.5.4.3.2 Scenario 2: TDD/TDD cell re-selection multi carrier case

A.5.4.1.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the cell re-selection delay in CELL_FACH state in the multi carrier case reported in section 5.4.4.1.2. The test parameters are given in Tables A.5.4.21 to A.5.4.24.

Table A.5.4.21: General test parameters for Cell Re-selection in CELL_FACH

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-102	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value		-	1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1,28	The value shall be used for all cells in the test.
T1		s	15 (initial), 5 (repetition)	
T2		s	5	

Table A.5.4.22: Physical channel parameters for S-CCPCH.

Parameter	Unit	Level
Channel bit rate	Kbps	24,4
Channel symbol rate	Ksps	12,2
Slot Format #	-	0
Frame allocation	-	Continuous frame allocation
Midamble allocation	-	Default Midamble

Table A.5.4.23: Transport channel parameters for S-CCPCH

Parameter	FACH
Transport Channel Number	1
Transport Block Size	240
Transport Block Set Size	240
Transmission Time Interval	20 ms
Type of Error Protection	Convolutional Coding
Coding Rate	½
Rate Matching attribute	256
Size of CRC	16

Table A.5.4.24: Cell specific test parameters for Cell Re-selection in CELL_FACH

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 2				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5	10	10	10	10
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	9	3	9	3	3	9	3	9	-1	-1	-1	-1
PCCPCH RSCP	dBm	-64	-70			-70	-64			-74	-74		
Qoffset1$_{s,n}$	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1,C6:0				C2, C1: 0; C2, C3:0; C2,C4:0 C2, C5: 0; C2, C6:0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5: 0; C3, C6:0			
Qhyst1$_s$	dB	0				0				0			
Treselection		0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
Sintersearch	dB	not sent				not sent				not sent			
FACH measurement occasion info		not sent				not sent				not sent			
Inter-frequency TDD measurement indicator		TRUE				TRUE				TRUE			
I_{oc}	dBm/ 7,68 MHz	-70											
Propagation Condition		AWGN											
		Cell 4				**Cell 5**				**Cell 6**			
Timeslot		**0**		**8**		**0**		**8**		**0**		**8**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 2				Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		15	15	15	15	20	20	20	20	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74		
Qoffset**1**$_{s,n}$	dB	C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0				C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0			
Qhyst1$_s$	dB	0				0				0			
Treselection		0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
Sintersearch	dB	not sent				not sent				not sent			
FACH measurement occasion info		not sent				not sent				not sent			
Inter-frequency TDD measurement indicator		TRUE				TRUE				TRUE			
I_{oc}	dBm/ 7,68 MHz	-70											
Propagation Condition		AWGN											

NOTE: S-CCPCH shall not be located in TS0.

A.5.4.3.2.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the CELL UPDATE message with cause value "cell reselection" in cell 2.

The cell re-selection delay shall be less than 3 s.

The rate of correct cell re-selections observed during repeated tests shall be at least 90%.

A.5.5 Cell Re-selection in CELL_PCH

A.5.5.1 Scenario 1: Re-selection to intra-frequency TDD cell

A.5.5.1.1 Test Purpose and Environment

A.5.5.1.1.1 3.84Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in CELL_PCH state in section 5.5.2.

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.5.5.1and A.5.5.2.

Table A.5.5.1: General test parameters for Cell Re-selection to intra-frequency cell

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-102	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1.28	The value shall be used for all cells in the test.
DRX cycle length		s	1.28	The value shall be used for all cells in the test.
T1		s	15	
T2		s	15	

Table A.5.5.2: Cell re-selection to intra-frequency cell

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5	10	10	10	10
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	9	7	9	7	7	9	7	9	-1	-1	-1	-1
PCCPCH RSCP	dBm	-64	-66			-66	-64			-74	-74		
Qoffset1$_{s,n}$	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1,C6:0				C2, C1: 0; C2, C3:0; C2,C4:0 C2, C5: 0; C2, C6:0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5: 0; C3, C6:0			
Qhyst1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
		Cell 4				**Cell 5**				**Cell 6**			
Timeslot		**0**		**8**		**0**		**8**		**0**		**8**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		15	15	15	15	20	20	20	20	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74		
Qoffset1$_{s,n}$	dB	C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0				C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0			
Qhyst1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
I_{oc}	dBm/3, 84 MHz	-70											
Propagation Condition		AWGN											

A.5.5.1.1.2 1.28Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in CELL_PCH state in section 5.5.2.2.

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.5.5.3 and A.5.5.4.

Table A.5.5.3: General test parameters for Cell Re-selection to intra-frequency TDD cell in

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-103	The value shall be used for all cells in the test.
Access Service Class (ASC#0) -- Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1.28	The value shall be used for all cells in the test.
DRX cycle length		s	1.28	The value shall be used for all cells in the test.
T1		s	15	
T2		s	15	

Table A.5.5.4: Cell re-selection to intra-frequency TDD cell

Parameter	**Unit**	**Cell 1**				**Cell 2**				**Cell 3**			
Timeslot Number		**0**		**DWPTS**		**0**		**DWPTS**		**0**		**DWPTS**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/Ior	dB			0	0			0	0			0	0
OCNS_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
$\hat{I}_{or}/I_{oc}$	dB	10	7	10	7	7	10	7	10	-1	-1	-1	-1
PCCPCH RSCP	dBm	-63	-66			-66	-63			-74	-74		
$Qoffset1_{s,n}$	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1,C6:0				C2, C1: 0; C2, C3:0; C2,C4:0 C2, C5: 0; C2, C6:0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5: 0; C3, C6:0			
$Qhyst1_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
		Cell 4				**Cell 5**				**Cell 6**			
Timeslot		**0**		**DWPTS**		**0**		**DWPTS**		**0**		**DWPTS**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/Ior	dB			0	0			0	0			0	0
OCNS_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
$\hat{I}_{or}/I_{oc}$	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74		
$Qoffset1_{s,n}$	dB	C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0				C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0			
$Qhyst1_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
I_{oc}	dBm/1.28 MHz	-70											
Propagation Condition		AWGN											
NOTE: In the case of multi-frequency network,the UTRA RF Channel Number is the primary frequency"s channel number.													

A.5.5.1.1.3 7.68Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in CELL_PCH state in section 5.5.2.

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.5.5.3A and A.5.5.4A.

Table A.5.5.3A: General test parameters for Cell Re-selection to intra-frequency TDD cell

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-102	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1.28	The value shall be used for all cells in the test.
DRX cycle length		s	1.28	The value shall be used for all cells in the test.
T1		s	15	
T2		s	15	

Table A.5.5.4A: Cell re-selection to intra-frequency TDD cell

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5	10	10	10	10
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	9	7	9	7	7	9	7	9	-1	-1	-1	-1
PCCPCH RSCP	dBm	-64	-66			-66	-64			-74	-74		
Qoffset1$_{s,n}$	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1,C6:0				C2, C1: 0; C2, C3:0; C2,C4:0 C2, C5: 0; C2, C6:0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5: 0; C3, C6:0			
Qhyst1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
		Cell 4				**Cell 5**				**Cell 6**			
Timeslot		**0**		**8**		**0**		**8**		**0**		**8**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		15	15	15	15	20	20	20	20	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74		
Qoffset1$_{s,n}$	dB	C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0				C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0			
Qhyst1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
I_{oc}	dBm/7, 68 MHz	-70											
Propagation Condition		AWGN											

A.5.5.1.2 Test Requirements

A.5.5.1.2.1 for 3.84Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the CELL UPDATE message with cause "cell reselection" in cell 2.

The cell re-selection delay shall be less than 8 s.

NOTE:

The cell re-selection delay can be expressed as: $T_{evaluateTDD} + T_{SI}$, where:

$T_{evaluateTDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ TDD}$ of 6.4s according to Table 4.1 in section 4.2.2.7.

T_{SI} Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

A.5.5.1.2.2 1.28Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send SYNCH-UL sequence in the UpPTS for sending the CELL UPDATE message with cause "cell reselection" in cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$T_{evaluateNTDD} + T_{SI}$$

where:

$T_{evaluateNTDD}$: A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ NTDD}$ of 6.4s according to Table 4.1A in section 4.2.

T_{SI}: Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

A.5.5.1.2.3 7.68Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the CELL UPDATE message with cause "cell reselection" in cell 2.

The cell re-selection delay shall be less than 8 s.

NOTE:

The cell re-selection delay can be expressed as: $T_{evaluateTDD} + T_{SI}$, where:

$T_{evaluateTDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ TDD}$ of 6.4s according to Table 4.1B in section 4.2.2.7.

T_{SI} Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

A.5.5.2 Scenario 2: Re-selection to inter-frequency TDD cell

A.5.5.2.1 Test Purpose and Environment

A.5.5.2.1.1 for 3.84Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in CELL_PCH state in section 5.5.2.

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.5.5.5 and A.5.5.6

Table A.5.5.5: General test parameters for Cell Re-selection to inter-frequency TDD cell

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-102	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1.28	The value shall be used for all cells in the test.
DRX cycle length		s	1.28	The value shall be used for all cells in the test.
T1		s	30	
T2		s	15	

Table A.5.5.6: Cell re-selection to inter-frequency TDD cell

Parameter	**Unit**	**Cell 1**				**Cell 2**				**Cell 3**			
Timeslot Number		**0**		**8**		**0**		**8**		**0**		**8**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 2				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5	10	10	10	10
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	6	0	6	0	0	6	0	6	-3	-3	-3	-3
PCCPCH RSCP	dBm	-67	-73			-73	-67			-76	-76		
Qoffset1$_{s,n}$	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1, C6:0				C2, C1: 0; C2, C3:0; C2,C4:0 C2, C5:0; C2, C6:0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5:0; C3, C6:0			
Qhyst1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
Sintersearch	dB	not sent				not sent				not sent			
		Cell 4				**Cell 5**				**Cell 6**			
Timeslot		**0**		**8**		**0**		**8**		**0**		**8**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 2				Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		15	15	15	15	20	20	20	20	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
PCCPCH RSCP	dBm	-76	-76			-76	-76			-76	-76		
Qoffset1$_{s,n}$	dB	C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0				C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0			
Qhyst1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
Sintersearch	dB	not sent				not sent				not sent			
I_{oc}	dBm/3, 84 MHz	-70											
Propagation Condition		AWGN											

A.5.5.2.1.2 for 1.28Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in CELL_PCH state in section 5.5.2.2.

This scenario implies the presence of 2 carriers and 6 cells as given in Table A.5.5.7 and A.5.5.8.

Table A.5.5.7: General test parameters for Cell Re-selection to inter-frequency TDD cell

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-103	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1.28	The value shall be used for all cells in the test.
DRX cycle length		s	1.28	The value shall be used for all cells in the test.
T1		s	30	
T2		s	15	

Table A.5.5.8: Cell re-selection to inter-frequency TDD cell

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		0		DWPTS		0		DWPTS		0		DWPTS	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number (NOTE)		Channel 1				Channel 2				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/Ior	dB			0	0			0	0			0	0
OCNS_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
$\hat{I}_{or}/I_{oc}$	dB	10	4	10	4	4	10	4	10	-1	-1	-1	-1
PCCPCH RSCP	dBm	-63	-69			-69	-63			-74	-74		
$Qoffset1_{s,n}$	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1, C6:0				C2, C1: 0; C2, C3:0; C2,C4:0C2, C5:0; C2, C6:0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5:0; C3, C6:0			
$Qhyst1_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
Sintersearch	dB	not sent				not sent				not sent			
		Cell 4				Cell 5				Cell 6			
Timeslot		0		DWPTS		0		DWPTS		0		DWPTS	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number (NOTE)		Channel				Channel 2				Channel			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/Ior	dB			0	0			0	0			0	0
OCNS_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
$\hat{I}_{or}/I_{oc}$	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74		
$Qoffset1_{s,n}$	dB	C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0				C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0			
$Qhyst1_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
Sintersearch	dB	not sent				not sent				not sent			
I_{oc}	dBm/ 1.28 MHz	-70											
Propagation Condition		AWGN											
NOTE: In case of multi-frequency network, the UTRA RF Channel Number is the primary frequency"s channel number.													

A.5.5.2.1.3 7.68Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in CELL_PCH state in section 5.5.2.

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.5.5.9 and A.5.5.10

Table A.5.5.9: General test parameters for Cell Re-selection to inter-frequency TDD cell

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-102	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1.28	The value shall be used for all cells in the test.
DRX cycle length		s	1.28	The value shall be used for all cells in the test.
T1		s	30	
T2		s	15	

Table A.5.5.10: Cell re-selection to inter-frequency TDD cell

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 2				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5	10	10	10	10
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	6	0	6	0	0	6	0	6	-3	-3	-3	-3
PCCPCH RSCP	dBm	-67	-73			-73	-67			-76	-76		
Qoffset1$_{s,n}$	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1, C6:0				C2, C1: 0; C2, C3:0; C2,C4:0 C2, C5:0; C2, C6:0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5:0; C3, C6:0			
Qhyst1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
Sintersearch	dB	not sent				not sent				not sent			
		Cell 4				Cell 5				Cell 6			
Timeslot		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 2				Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		15	15	15	15	20	20	20	20	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
PCCPCH RSCP	dBm	-76	-76			-76	-76			-76	-76		
Qoffset1$_{s,n}$	dB	C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0				C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0			
Qhyst1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
Sintersearch	dB	not sent				not sent				not sent			
I_{oc}	dBm/7, 68 MHz	-70											
Propagation Condition		AWGN											

A.5.5.2.2 Test Requirements

A.5.5.2.2.1 for 3.84Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the CELL UPDATE message with cause "cell reselection" in cell 2.

The cell re-selection delay shall be less than 8 s.

NOTE:

The cell re-selection delay can be expressed as: $T_{evaluateTDD} + T_{SI}$, where:

$T_{evaluateTDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ TDD}$ of 6.4s according to Table 4.1 in section 4.2.2.7.

T_{SI} Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

A.5.5.2.2.2 for 1.28Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the SYNCH-UL sequence in the UpPTS for sending the CELL UPDATE message with cause "cell reselection" in cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$T_{evaluateNTDD} + T_{SI}$$

where:

$T_{evaluateNTDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ NTDD}$ of 6.4s according to Table 4.1A in section 4.2.

T_{SI} Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

A.5.5.2.2.3 for 7.68Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the CELL UPDATE message with cause "cell reselection" in cell 2.

The cell re-selection delay shall be less than 8 s.

NOTE:

The cell re-selection delay can be expressed as: $T_{evaluateTDD} + T_{SI}$, where:

$T_{evaluateTDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ TDD}$ of 6.4s according to Table 4.1B in section 4.2.2.7.

T_{SI} Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

A.5.6 Cell Re-selection in URA_PCH

A.5.6.1 Scenario 1: Re-selection to intra-frequency TDD cell

A.5.6.1.1 Test Purpose and Environment

A.5.6.1.1.1 for 3.84Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in URA_PCH state in section 5.6.2.

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.5.6.1 and A.5.6.2.

Cell1 and Cell2 shall belong to different UTRAN Registration Areas (URA).

Table A.5.6.1: General test parameters for Cell Re-selection to intra-frequency TDD cell

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-102	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1.28	The value shall be used for all cells in the test.
DRX cycle length		s	1.28	The value shall be used for all cells in the test.
T1		s	15	
T2		s	15	

Table A.5.6.2: Cell re-selection to intra-frequency TDD cell

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		**0**		**8**		**0**		**8**		**0**		**8**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5	10	10	10	10
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	9	7	9	7	7	9	7	9	-1	-1	-1	-1
PCCPCH RSCP	dBm	-64	-66			-66	-64			-74	-74		
Qoffset1$_{s,n}$	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1,C6:0				C2, C1: 0; C2, C3:0; C2,C4:0 C2, C5: 0; C2, C6:0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5: 0; C3, C6:0			
Qhyst1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
		Cell 4				**Cell 5**				**Cell 6**			
Timeslot		**0**		**8**		**0**		**8**		**0**		**8**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		15	15	15	15	20	20	20	20	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74		
Qoffset1$_{s,n}$	dB	C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0				C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0			
Qhyst1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
I_{oc}	dBm/3,84 MHz	-70											
Propagation Condition		AWGN											

A.5.6.1.1.2 for 1.28Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in URA_PCH state in section 5.6.2.2.

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.5.6.3 and A.5.6.4.

Cell1 and Cell2 shall belong to different UTRAN Registration Areas (URA).

Table A.5.6.3: General test parameters for Cell Re-selection to intra-frequency TDD cell

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-103	The value shall be used for all cells in the test.
Access Service Class (ASC#0) -- Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1.28	The value shall be used for all cells in the test.
DRX cycle length		s	1.28	The value shall be used for all cells in the test.
T1		s	15	
T2		s	15	

Table A.5.6.4: Cell re-selection to intra-frequency TDD cell

Parameter	**Unit**	**Cell 1**				**Cell 2**				**Cell 3**			
Timeslot Number		**0**		**DWPTS**		**0**		**DWPTS**		**0**		**DWPTS**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number (NOTE)		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/Ior	dB			0	0			0	0			0	0
OCNS_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
$\hat{I}_{or}/I_{oc}$	dB	10	7	10	7	7	10	7	10	-1	-1	-1	-1
PCCPCH RSCP	dBm	-63	-66			-66	-63			-74	-74		
$Qoffset1_{s,n}$	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1,C6:0				C2, C1: 0; C2, C3:0; C2,C4:0 C2, C5: 0; C2, C6:0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5: 0; C3, C6:0			
$Qhyst1_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
		Cell 4				**Cell 5**				**Cell 6**			
Timeslot		**0**		**DWPTS**		**0**		**DWPTS**		**0**		**DWPTS**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number (NOTE)		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/Ior	dB			0	0			0	0			0	0
OCNS_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
$\hat{I}_{or}/I_{oc}$	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74		
$Qoffset1_{s,n}$	dB	C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0				C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0			
$Qhyst1_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
I_{oc}	dBm/1.28 MHz	-70											
Propagation Condition		AWGN											
NOTE1: In the case of multi-frequency network,the UTRA RF Channel Number is the primary frequency"s channel number.													

A.5.6.1.1.3 for 7.68Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in URA_PCH state in section 5.6.2.

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.5.6.3A and A.5.6.4A.

Cell1 and Cell2 shall belong to different UTRAN Registration Areas (URA).

Table A.5.6.3A: General test parameters for Cell Re-selection to intra-frequency TDD cell

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-102	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1.28	The value shall be used for all cells in the test.
DRX cycle length		s	1.28	The value shall be used for all cells in the test.
T1		s	15	
T2		s	15	

Table A.5.6.4A: Cell re-selection to intra-frequency TDD cell

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		**0**		**8**		**0**		**8**		**0**		**8**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5	10	10	10	10
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	9	7	9	7	7	9	7	9	-1	-1	-1	-1
PCCPCH RSCP	dBm	-64	-66			-66	-64			-74	-74		
Qoffset1$_{s,n}$	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1,C6:0				C2, C1: 0; C2, C3:0; C2,C4:0 C2, C5: 0; C2, C6:0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5: 0; C3, C6:0			
Qhyst1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
		Cell 4				**Cell 5**				**Cell 6**			
Timeslot		**0**		**8**		**0**		**8**		**0**		**8**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		15	15	15	15	20	20	20	20	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74		
Qoffset1$_{s,n}$	dB	C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0				C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0			
Qhyst1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
I_{oc}	dBm/7,68 MHz	-70											
Propagation Condition		AWGN											

A.5.6.1.2 Test Requirements

A.5.6.1.2.1 for 3.84Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the URA UPDATE message with URA update cause value "change of URA " in cell 2.

The cell re-selection delay shall be less than 8 s.

NOTE:

The cell re-selection delay can be expressed as: $T_{evaluateTDD} + T_{SI}$, where:

$T_{evaluateTDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ TDD}$ of 6.4s according to Table 4.1 in section 4.2.2.7.

T_{SI} Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

A.5.6.1.2.2 for 1.28Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send SYNCH-UL sequence in the UpPTS for sending the URA UPDATE message with URA update cause value "change of URA" in cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$T_{evaluateNTDD} + T_{SI}$$

where:

$T_{evaluateNTDD}$: A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ NTDD}$ of 6.4s according to Table 4.1A in section 4.2.

T_{SI}: Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

A.5.6.1.2.3 for 7.68Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the URA UPDATE message with URA update cause value "change of URA " in cell 2.

The cell re-selection delay shall be less than 8 s.

NOTE:

The cell re-selection delay can be expressed as: $T_{evaluateTDD} + T_{SI}$, where:

$T_{evaluateTDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ TDD}$ of 6.4s according to Table 4.1B in section 4.2.2.7.

T_{SI} Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

A.5.6.2 Scenario 2: Re-selection to inter-frequency TDD cell

A.5.6.2.1 Test Purpose and Environment

A.5.6.2.1.1 for 3.84Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in URA_PCH state in section 5.6.2.

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.5.6.5 and A.5.6.6.

Table A.5.6.5: General test parameters for Cell Re-selection to inter-frequency TDD cell

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-102	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1.28	The value shall be used for all cells in the test.
DRX cycle length		s	1.28	The value shall be used for all cells in the test.
T1		s	30	
T2		s	15	

Table A.5.6.6: Cell re-selection to inter-frequency TDD cell

Parameter	**Unit**	**Cell 1**				**Cell 2**				**Cell 3**			
Timeslot Number		**0**		**8**		**0**		**8**		**0**		**8**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 2				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5	10	10	10	10
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	6	0	6	0	0	6	0	6	-3	-3	-3	-3
PCCPCH RSCP	dBm	-67	-73			-73	-67			-76	-76		
Qoffset1$_{s,n}$	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1, C6:0				C2, C1: 0; C2, C3:0; C2,C4:0C2, C5:0; C2, C6:0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5:0; C3, C6:0			
Qhyst1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
Sintersearch	dB	not sent				not sent				not sent			
		Cell 4				**Cell 5**				**Cell 6**			
Timeslot		**0**		**8**		**0**		**8**		**0**		**8**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 2				Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		15	15	15	15	20	20	20	20	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
PCCPCH RSCP	dBm	-76	-76			-76	-76			-76	-76		
Qoffset1$_{s,n}$	dB	C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0				C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0			
Qhyst1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
Sintersearch	dB	not sent				not sent				not sent			
I_{oc}	dBm/3,84 MHz	-70											
Propagation Condition		AWGN											

A.5.6.2.1.2 1.28Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in URA_PCH state in section 5.6.2.2.

This scenario implies the presence of 2 carriers and 6 cells as given in Table A.5.6.7 and A.5.6.8.

Cell1 and Cell2 shall belong to different UTRAN Registration Areas (URA).

Table A.5.6.7: General test parameters for Cell Re-selection to inter-frequency TDD cell

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-103	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1.28	The value shall be used for all cells in the test.
DRX cycle length		s	1.28	The value shall be used for all cells in the test.
T1		s	30	
T2		s	15	

Table A.5.6.8: Cell re-selection to inter-frequency TDD cell

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		0		DWPTS		0		DWPTS		0		DWPTS	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 2				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/Ior	dB			0	0			0	0			0	0
OCNS_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
$\hat{I}_{or}/I_{oc}$	dB	10	4	10	4	4	10	4	10	-1	-1	-1	-1
PCCPCH RSCP	dBm	-63	-69			-69	-63			-74	-74		
Qoffset1$_{s,n}$	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1, C6:0				C2, C1: 0; C2, C3:0; C2,C4:0C2, C5:0; C2, C6:0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5:0; C3, C6:0			
Qhyst1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
Sintersearch	dB	not sent				not sent				not sent			
		Cell 4				Cell 5				Cell 6			
Timeslot		0		DWPTS		0		DWPTS		0		DWPTS	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel				Channel 2				Channel			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/Ior	dB			0	0			0	0			0	0
OCNS_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
$\hat{I}_{or}/I_{oc}$	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74		
Qoffset1$_{s,n}$	dB	C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0				C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0			
Qhyst1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
Sintersearch	dB	not sent				not sent				not sent			
I_{oc}	dBm/1.28 MHz	-70											
Propagation Condition		AWGN											

A.5.6.2.1.3 for 7.68Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in URA_PCH state in section 5.6.2.

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.5.6.9 and A.5.6.10.

Table A.5.6.9: General test parameters for Cell Re-selection to inter-frequency TDD cell

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-102	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		s	1.28	The value shall be used for all cells in the test.
DRX cycle length		s	1.28	The value shall be used for all cells in the test.
T1		s	30	
T2		s	15	

Table A.5.6.10: Cell re-selection to inter-frequency TDD cell

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		**0**		**8**		**0**		**8**		**0**		**8**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 2				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5	10	10	10	10
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	6	0	6	0	0	6	0	6	-3	-3	-3	-3
PCCPCH RSCP	dBm	-67	-73			-73	-67			-76	-76		
Qoffset1$_{s,n}$	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1, C6:0				C2, C1: 0; C2, C3:0; C2,C4:0C2, C5:0; C2, C6:0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5:0; C3, C6:0			
Qhyst1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
Sintersearch	dB	not sent				not sent				not sent			
		Cell 4				**Cell 5**				**Cell 6**			
Timeslot		**0**		**8**		**0**		**8**		**0**		**8**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 2				Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		15	15	15	15	20	20	20	20	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
PCCPCH RSCP	dBm	-76	-76			-76	-76			-76	-76		
Qoffset1$_{s,n}$	dB	C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0				C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0			
Qhyst1$_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
Sintersearch	dB	not sent				not sent				not sent			
I_{oc}	dBm/7,68 MHz	-70											
Propagation Condition		AWGN											

A.5.6.2.2 Test Requirements

A.5.6.2.2.1 3.84Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the URA UPDATE message with URA update cause "change of URA " in cell 2.

The cell re-selection delay shall be less than 8 s.

NOTE:

The cell re-selection delay can be expressed as: $T_{evaluateTDD} + T_{SI}$, where:

$T_{evaluateTDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ TDD}$ of 6.4s according to Table 4.1 in section 4.2.2.7.

T_{SI} Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

A.5.6.2.2.2 1.28Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the SYNCH-UL sequence in the UpPTS for sending the URA UPDATE message with URA update cause "change of URA" in cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$T_{evaluateNTDD} + T_{SI}$$

where:

$T_{evaluateNTDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ NTDD}$ of 6.4s according to Table 4.1A in section 4.2.

T_{SI} Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

A.5.6.2.2.3 7.68Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the URA UPDATE message with URA update cause "change of URA " in cell 2.

The cell re-selection delay shall be less than 8 s.

NOTE:

The cell re-selection delay can be expressed as: $T_{evaluateTDD} + T_{SI}$, where:

$T_{evaluateTDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ TDD}$ of 6.4s according to Table 4.1B in section 4.2.2.7.

T_{SI} Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

A.6 (void)

A.6A RRC Connection Control

A.6A.1 RRC re-establishment delay

A.6A.1.1 3.84 Mcps TDD option

A.6A.1.1.1 RRC re-establishment delay to a known target cell

A.6A.1.1.1.1 Test Purpose and Environment

The purpose is to verify that the RRC re-establishment delay to a known target cell is within the specified limits. This test will partly verify the requirements in section 6A.1.2.

The test parameters are given in table A.6A.1 and table A.6A.2 below. In the measurement control information it is indicated to the UE that periodic reporting shall be used. The test consists of 2 successive time periods, with time durations of T1 and T2 respectively.

During T1, the DL DPCH in cell 1 shall be transmitted in timeslot 2 and the UL DPCH in cell 1 shall be transmitted in timeslot 10. At the beginning of time period T2, the DPCH shall be removed.

Cell 1 and cell shall be synchronised, i.e. share the same frame and timeslot timing.

Table A.6A.1: General test parameters for RRC re-establishment delay, known target cell case

Parameter		Unit	Value	Comment
DCH parameters			DL reference measurement channel 12.2 kbps	As specified in TS 25.102 section A.2.2
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	Cell 2 shall be included in the monitored set in Cell 1.
	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
Access Service Class (ASC#0) - Persistence value		-	1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
N313			20	
N315			1	
T313		Seconds	0	
T_{SI}		ms	1280	
Monitored cell list size			24 TDD neighbours on Channel 1	
Reporting frequency		Seconds	4	
T1			10	
T2			6	

Table A.6A.2: Cell specific parameters for RRC re-establishment delay test, known target cell case

Parameter	Unit	Cell 1				Cell 2			
Timeslot Number		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3	n.a.	n.a.	-3	-3	n.a.	n.a.
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	15	15	15	15
PICH_Ec/Ior	dB	n.a.	n.a.	-3	-3	n.a.	n.a.	-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	3	-13	3	-13	5	5	5	5
I_{oc}	dBm/ 3.84 MHz	-70							
P-CCPCH_RSCP	dB	-70	-86	n.a.	n.a.	-68	-68	n.a.	n.a.
Propagation Condition		AWGN							

A.6A.1.1.1.2 Test Requirements

The RRC re-establishment delay $T_{RE\text{-}ESTABLISH}$ to a known target cell shall be less than 2 s.

The rate of successful RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in this test case can be expressed as,

$$T_{RE\text{-}ESTABLISH} = T_{RRC\text{-}RE\text{-}ESTABLISH} + T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ\text{-}KNOWN}.$$

where,

$T_{RRC\text{-}RE\text{-}ESTABLISH} = 160ms + (N_{313}-1)*10ms + T_{313}$

$T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ\text{-}KNOWN} = 50ms + T_{SEARCH\text{-}KNOWN} + T_{SI} + T_{RA}$,

and,

N_{313} Equal to 20 and therefore resulting in 200 ms delay.

T_{313} Equal to 0 s.

$T_{SEARCH\text{-}KNOWN}$ Equal to 100 ms

T_{SI} Equal to 1280 ms, the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16] for a UTRAN cell.

T_{RA} Equal to 40 ms, the additional delay caused by the random access procedure.

A.6A.1.1.2 RRC re-establishment delay to an unknown target cell

A.6A.1.1.2.1 Test Purpose and Environment

The purpose is to verify that the RRC re-establishment delay to an unknown target cell is within the specified limits. This test will partly verify the requirements in section 6A.1.2.

The test parameters are given in table A.6A.3 and table A.6A.4 below. In the measurement control information it is indicated to the UE that periodic reporting shall be used. The test consists of 2 successive time periods, with time durations of T1 and T2 respectively.

During T1, the DL DPCH in cell 1 shall be transmitted in timeslot 2 and the UL DPCH in cell 1 shall be transmitted in timeslot 10. At the beginning of time period T2, the DPCH shall be removed.

Cell 1 and cell shall be synchronised, i.e. share the same frame and timeslot timing.

Table A.6A.3: General test parameters for RRC re-establishment delay, unknown target cell case

Parameter		Unit	Value	Comment
DCH parameters			DL reference measurement channel 12.2 kbps	As specified in TS 25.102 section A.2.2
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	Cell 2 shall not be included in the monitored set in Cell 1.
	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
Access Service Class (ASC#0) - Persistence value		-	1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.

N313		20	
N315		1	
T313	Seconds	0	
T_{SI}	ms	1280	
Monitored cell list size		16 TDD neighbours on Channel 1 16 TDD neighbours on Channel 2	
Reporting frequency	Seconds	4	
T1		10	
T2		6	

Table A.6A.4: Cell specific parameters for RRC re-establishment delay test, unknown target cell case

Parameter	Unit	Cell 1				Cell 2			
Timeslot Number		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3	n.a.	n.a.	-3	-3	n.a.	n.a.
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	15	15	15	15
PICH_Ec/Ior	dB	n.a.	n.a.	-3	-3	n.a.	n.a.	-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	3	-13	3	-13	5	5	5	5
I_{oc}	dBm/ 3.84 MHz	-70							
P-CCPCH_RSCP	dB	-70	-86	n.a.	n.a.	-68	-68	n.a.	n.a.
Propagation Condition		AWGN							

A.6A.1.1.2.2 Test Requirements

The RRC re-establishment delay $T_{RE\text{-}ESTABLISH}$ to an unknown target cell shall be less than 3,7 s.

The rate of successful RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in this test case can be expressed as,

$$T_{RE\text{-}ESTABLISH} = T_{RRC\text{-}RE\text{-}ESTABLISH} + T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ\text{-}UNKNOWN}.$$

where,

$T_{RRC\text{-}RE\text{-}ESTABLISH} = 160ms+(N_{313}-1)*10ms+T_{313}$

$T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ\text{-}KNOWN} = 50ms+T_{SEARCH\text{-}UNKNOWN} *NF + T_{SI} + T_{RA}$,

and,

N_{313} Equal to 20 and therefore resulting in 200 ms delay.

T_{313} Equal to 0 s.

$T_{SEARCH\text{-}UNKNOWN}$ Equal to 800 ms

NF Equal to 2, the number of different frequencies in the monitored set of cell 1.

T_{SI} Equal to 1280 ms, the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16] for a UTRAN cell.

T_{RA} Equal to 40 ms, the additional delay caused by the random access procedure.

A.6A.1.2 1.28 Mcps TDD Option

A.6A.1.2.1 Test Purpose and Environment

A.6A.1.2.1.1 Test 1

The purpose is to verify that the RRC connection re-establishment delay is within the specified limits. These tests will verify the requirements in section 6A.1.2.2.

The test parameters are given in table A.6A.5 and table A.6A.6 below. In the measurement control information it is indicated to the UE that periodic reporting shall be used. The test consists of 2 successive time periods, with a time duration of T1 and T2 respectively. At the start of time period T2, the dedicated channel is removed.

Table A.6A.5: General test parameters for RRC connection re-establishment delay, Test 1

Parameter	Unit	Value	Comment
DCH Parameters		DL Reference measurement channel 12.2 kbps	As specified in TS25.102, section A.2.2.2
Power Control		On	
Active cell, Initial condition		Cell 1	
Active cell, Final condition		Cell 2	
N313		20	
N315		1	
T313	Seconds	0	
T_{SI}	ms	1280	Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). Note: Since 1280 ms is one of the typical values for repeating system information blocks, T_{SI} of 1280 ms could be increased by the RRC procedure delay in order to allow the SIB repetition period of 1280 ms
Monitored cell list size		24	Monitored set shall only include intra frequency neighbours
Cell 2			Included in monitored set
Reporting frequency	Seconds	4	
T1	s	10	
T2	s	6	

Table A.6A.6: Cell specific parameters for RRC connection re-establishment delay test, Test 1

Parameter	Unit	Cell 1				Cell 2			
Timeslot Number		0		5		0			
		T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number (NOTE3)		Channel 1				Channel 1			
DPCH_Ec/Ior	dB	Not applicable		Note 1	-infinity	Not applicable			
OCNS_Ec/Ior	dB	Note 2		Note 2		Note 2			
PCCPCH_Ec/Ior	dB	-3				-3			
$\hat{I}_{or}/I_{oc}$	dB	[3]	-infinity	3	-infinity	6	6		
I_{oc}	dBm/ 1.28 MHz	-70							
PCCPCH_RSCP	dBm	-70	-infinity	Not applicable		-67	-67		
Propagation Condition		AWGN							

NOTE 1: The DPCH level is controlled by the power control loop.
NOTE 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}.
NOTE 3: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency.

A.6A.1.2.1.2 Test 2

The test parameters are given in table A.6A.7 and table A.6A.8 below. In the measurement control information it is indicated to the UE that periodic reporting shall be used. The test consists of 2 successive time periods, with a time duration of T1 and T2 respectively. At the start of time period T2, the dedicated channel is removed.

Table A.6A.7: General test parameters for RRC connection re-establishment delay, Test 2

Parameter	Unit	Value	Comment
DCH Parameters		DL Reference measurement channel 12.2 kbps	As specified in TS25.102, section A.2.2.2
Power Control		On	
Active cell, Initial condition		Cell 1	Channel 1
Active cell, Final condition		Cell 2	Channel 2 or 3
N313		20	
N315		1	
T313	Seconds	0	
T_{SI}	ms	1280	Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). Note: Since 1280 ms is one of the typical values for repeating system information blocks, T_{SI} of 1280 ms could be increased by the RRC procedure delay in order to allow the SIB repetition period of 1280 ms
Cells in the monitored set		24	
Channels in the monitored set		Channel 1, Channel 2, Channel 3	
Cell 2			Cell 2 is not included in the monitored set. Cell 2 is located on a different channel than cell 1.
Reporting frequency	Seconds	4	
T1	s	10	
T2	s	6	

Table A.6A.8: Cell specific parameters for RRC connection re-establishment delay test, Test 2

Parameter	Unit	Cell 1				Cell 2			
Timeslot Number		0		5		0			
		T1	T2	T1	T2	T1	T2		
UTRA RF Channel Number (NOTE3)		Channel 1				Channel 2			
PCCPCH_Ec/Ior	dB	-3				-3			
DPCH_Ec/Ior	dB	Not applicable		Note 1	-infinity	Not applicable			
OCNS_Ec/Ior	dB	Note 2		Note 2		Note 2			
$\hat{I}_{or}/I_{oc}$	dB	3	-infinity	3	-infinity	6	6		
I_{oc}	dBm/ 1.28 MHz	-70							
PCCPCH_RSCP	dBm	-70	-infinity	Not applicable		-67	-67		
Propagation Condition		AWGN							

NOTE 1: The DPCH level is controlled by the power control loop.
NOTE 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}.
NOTE 3: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency.

A.6A.1.2.2 Test Requirements

A.6A.1.2.2.1 Test 1

The Re-establishment delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send SYNC-UL in the UpPTS for sending a CELL UPDATE message using the cause "radio link failure".

The Re-establishment delay $T_{RE\text{-}ESTABLISH}$ to a known cell shall be less than 1815 ms.

The rate of correct tests observed during repeated tests shall be at least 90%.

NOTE: The Re-establishment delay can be expressed in this case as

$$T_{RE\text{-}ESTABLISH} = T_{RRC\text{-}RE\text{-}ESTABLISH} + T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ\text{-}KNOWN.}$$

Where

$T_{RRC\text{-}RE\text{-}ESTABLISH} = 160ms + (N_{313}-1)*10ms + T_{313}$

$T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ\text{-}KNOWN} = 50ms + T_{search} + T_{SI} + T_{RA,}$

N313=20

T_{313}=0s

T_{search} is the time it takes for the UE to search the cell. T_{search} =100 ms in case of a known target cell.

T_{RA} The additional delay caused by the random access procedure. 35 ms is assumed in this test case

T_{SI} T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms) 1280 ms is assumed in this test case.

This gives a total delay of 1.815s allow 1.9s in the test case.

A.6A.1.2.2.2 Test 2

The Re-establishment delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send SYNC-UL in the UpPTS for sending a CELL UPDATE message using the cause "radio link failure".

The Re-establishment delay to an unknown cell shall be less than 4115 ms.

The rate of correct tests observed during repeated tests shall be at least 90%.

NOTE: The Re-establishment delay can be expressed in case as

$$T_{RE\text{-}ESTABLISH} = T_{RRC\text{-}RE\text{-}ESTABLISH} + T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ\text{-}UNKNOWN}.$$

Where

$T_{RRC\text{-}RE\text{-}ESTABLISH} = 160ms + (N_{313}-1)*10ms + T_{313}$

$T_{UERE\text{-}ESTABLISH\text{-}REQ\text{-}UNKNOWN} = 50ms + T_{search}*NF + T_{SI} + T_{RA}$,

$N_{313}=20$

$T_{313} = 0s$

T_{search} is the time it takes for the UE to search the cell. T_{search} =800 ms in case of an unknown target cell.

NF is the number of different frequencies in the monitored set. NF=3

T_{RA} The additional delay caused by the random access procedure. 35 ms is assumed in this test case

T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms).1280 ms is assumed in this test case.

This gives a total of 4.115s, allow 4.2s in the test case.

A.6A.1.3 7.68 Mcps TDD option

A.6A.1.3.1 RRC re-establishment delay to a known target cell

A.6A.1.3.1.1 Test Purpose and Environment

The purpose is to verify that the RRC re-establishment delay to a known target cell is within the specified limits. This test will partly verify the requirements in section 6A.1.2.

The test parameters are given in table A.6A.5A and table A.6A.6A below. In the measurement control information it is indicated to the UE that periodic reporting shall be used. The test consists of 2 successive time periods, with time durations of T1 and T2 respectively.

During T1, the DL DPCH in cell 1 shall be transmitted in timeslot 2 and the UL DPCH in cell 1 shall be transmitted in timeslot 10. At the beginning of time period T2, the DPCH shall be removed.

Cell 1 and cell shall be synchronised, i.e. share the same frame and timeslot timing.

Table A.6A.5A: General test parameters for RRC re-establishment delay, known target cell case

Parameter		Unit	Value	Comment
DCH parameters			DL reference measurement channel 12.2 kbps	As specified in TS 25.102 section A.2.2
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	Cell 2 shall be included in the monitored set in Cell 1.
	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
Access Service Class (ASC#0) - Persistence value		-	1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.

N313		20	
N315		1	
T313	Seconds	0	
T_{SI}	ms	1280	
Monitored cell list size		24 TDD neighbours on Channel 1	
Reporting frequency	Seconds	4	
T1		10	
T2		6	

Table A.6A.6A: Cell specific parameters for RRC re-establishment delay test, known target cell case

Parameter	Unit	Cell 1				Cell 2			
Timeslot Number		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3	n.a.	n.a.	-3	-3	n.a.	n.a.
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	15	15	15	15
PICH_Ec/Ior	dB	n.a.	n.a.	-3	-3	n.a.	n.a.	-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	3	-13	3	-13	5	5	5	5
I_{oc}	dBm/ 7.68 MHz	-70							
P-CCPCH_RSCP	dB	-70	-86	n.a.	n.a.	-68	-68	n.a.	n.a.
Propagation Condition		AWGN							

A.6A.1.3.1.2 Test Requirements

The RRC re-establishment delay $T_{RE\text{-}ESTABLISH}$ to a known target cell shall be less than 2 s.

The rate of successful RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in this test case can be expressed as,

$$T_{RE\text{-}ESTABLISH} = T_{RRC\text{-}RE\text{-}ESTABLISH} + T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ\text{-}KNOWN}.$$

where,

$T_{RRC\text{-}RE\text{-}ESTABLISH} = 160ms+(N_{313}-1)*10ms+T_{313}$

$T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ\text{-}KNOWN}=50ms+T_{SEARCH\text{-}KNOWN} + T_{SI} + T_{RA}$,

and,

N_{313} Equal to 20 and therefore resulting in 200 ms delay.

T_{313} Equal to 0 s.

$T_{SEARCH\text{-}KNOWN}$ Equal to 100 ms

T_{SI} Equal to 1280 ms, the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16] for a UTRAN cell.

T_{RA} Equal to 40 ms, the additional delay caused by the random access procedure.

A.6A.1.3.2 RRC re-establishment delay to an unknown target cell

A.6A.1.3.2.1 Test Purpose and Environment

The purpose is to verify that the RRC re-establishment delay to an unknown target cell is within the specified limits. This test will partly verify the requirements in section 6A.1.2.

The test parameters are given in table A.6A.7A and table A.6A.8A below. In the measurement control information it is indicated to the UE that periodic reporting shall be used. The test consists of 2 successive time periods, with time durations of T1 and T2 respectively.

During T1, the DL DPCH in cell 1 shall be transmitted in timeslot 2 and the UL DPCH in cell 1 shall be transmitted in timeslot 10. At the beginning of time period T2, the DPCH shall be removed.

Cell 1 and cell shall be synchronised, i.e. share the same frame and timeslot timing.

Table A.6A.7A: General test parameters for RRC re-establishment delay, unknown target cell case

Parameter		Unit	Value	Comment
DCH parameters			DL reference measurement channel 12.2 kbps	As specified in TS 25.102 section A.2.2
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	Cell 2 shall not be included in the monitored set in Cell 1.
	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
Access Service Class (ASC#0) - Persistence value		-	1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
N313			20	
N315			1	
T313		Seconds	0	
T_{SI}		ms	1280	
Monitored cell list size			16 TDD neighbours on Channel 1 16 TDD neighbours on Channel 2	
Reporting frequency		Seconds	4	
T1			10	
T2			6	

Table A.6A.8A: Cell specific parameters for RRC re-establishment delay test, unknown target cell case

Parameter	Unit	Cell 1				Cell 2			
Timeslot Number		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3	n.a.	n.a.	-3	-3	n.a.	n.a.
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	15	15	15	15
PICH_Ec/Ior	dB	n.a.	n.a.	-3	-3	n.a.	n.a.	-3	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	3	-13	3	-13	5	5	5	5
I_{oc}	dBm/ 7.68 MHz	-70							
P-CCPCH_RSCP	dB	-70	-86	n.a.	n.a.	-68	-68	n.a.	n.a.
Propagation Condition		AWGN							

A.6A.1.3.2.2 Test Requirements

The RRC re-establishment delay $T_{RE\text{-}ESTABLISH}$ to an unknown target cell shall be less than 3,7 s.

The rate of successful RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in this test case can be expressed as,

$$T_{RE\text{-}ESTABLISH} = T_{RRC\text{-}RE\text{-}ESTABLISH} + T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ\text{-}UNKNOWN}.$$

where,

$T_{RRC\text{-}RE\text{-}ESTABLISH}$= 160ms+($N_{313}$-1)*10ms+$T_{313}$

$T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ\text{-}KNOWN}$=50ms+$T_{SEARCH\text{-}UNKNOWN}$ *NF + T_{SI} + T_{RA},

and,

N_{313} Equal to 20 and therefore resulting in 200 ms delay.

T_{313} Equal to 0 s.

$T_{SEARCH\text{-}UNKNOWN}$ Equal to 800 ms

NF Equal to 2, the number of different frequencies in the monitored set of cell 1.

T_{SI} Equal to 1280 ms, the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16] for a UTRAN cell.

T_{RA} Equal to 40 ms, the additional delay caused by the random access procedure.

A.6A.2 Transport format combination selection in UE

A.6A.2.1 3.84 Mcps TDD option

A.6A.2.1.1 Test Purpose and Environment

The purpose is to verify the UE blocks (stops using) a currently used TFC when the UE output power is not sufficient to support that TFC. This test will verify the general requirement on TFC selection in section 6A.2.

A.6A.2.1.1.1 Interactive or Background, PS, UL: 64 kbps

The test will verify the general requirement on TFC selection in section 6A.2 for a 64 kbps UL reference RAB intended for packet data services, i.e. Interactive or Background, PS as defined in TS 34.108 and multiplexed to a 3.4 kbps DCCH.

The test parameters are given in Table A.6A.9, A.6A.10, A.6A.11 and Table A.6A.12 below. The test consists of 2 successive time periods, with a time duration of T1 and T2 respectively.

Details on the UL reference RAB in table A.6A.10 can be f ound in TS 34.108 section "Interactive or background / UL:64 DL: 64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH".

Table A.6A.9: General test parameters

Parameter	Unit	Value	Comment
TFCS size		10	
TFCS		UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3, UL_TFC4, UL_TFC5, UL_TFC6, UL_TFC7, UL_TFC8, UL_TFC9	Gain factors for TFC0 to TFC9 shall be set to 1.
Power Control		On	
Active cell		Cell 1	
Maximum allowed UL TX power	dBm	0	Value of IE "Maximum allowed UL Tx power
Primary CCPCH Tx power	dBm	18	Value of IE "Primary CCPCH Tx power"
UL timeslot interference	dBm	-80	Value of IE "UL timeslot interference" This value shall apply to all timeslots
α		1	IE "Alpha" either not sent or explicitly set to value
UL target SIR	dB	6	
DPCH constant offset	dB	adjustable	Value of IE "DPCH constant power
T1	s	10	
T2	s	10	

Table A.6A.10: Transport channel parameters for UL reference RAB, Interactive or Background and DCCH

Parameter	Unit	64 kbps RAB	DCCH 3.4kbps
Transport Channel Number		1	2
Transmission Time Interval	ms	20	40
Type of Error Protection		Turbo coding	Convolutional coding
Coding Rate		1/3	
Size of CRC	bits	16	
Transport Block Size	bits	336	148
Transport Block Set Size	bits	336*B (B=0,1,2,3,4)	148*B (B=0,1)
Transport Format Set	bits		
TF0		0x336	0x148
TF1		1x336	1x148
TF2		2x336	N/A
TF3		3x336	N/A
TF4		4x336	N/A

Table A.6A.11: UL TFCI

TFCI	(64 kbps RAB, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF0, TF1)
UL_TFC2	(TF1, TF0)
UL_TFC3	(TF1, TF1)
UL_TFC4	(TF2, TF0)
UL_TFC5	(TF2, TF1)
UL_TFC6	(TF3, TF0)
UL_TFC7	(TF3, TF1)
UL_TFC8	(TF4, TF0)
UL_TFC9	(TF4, TF1)

Table A.6A.12: Physical channel parameters

Parameter	Unit	Value
UL timeslot		7
Burst type		1
Resource units		{(spreading factor 16 x 1 code) + (spreading factor 4 x 1 code)} x 1 time slot
TFCI	Bits	16
TPC	Bits	2
Frame allocation		Continuous

The test shall be performed in AWGN channel propagation conditions. The P-CCPCH in the DL shall be transmitted in timeslot 0.

The amount of available user data shall be sufficient to allow uplink transmission at the highest bit rate (UL_TFC8 or UL_TFC9) during the entire test and it shall be ensured that the UE is using UL_TFC8 or UL_TFC9 at the end of T1.

The test shall be performed in the following way:

Before time period T1:

The allowed TFCS according to table A.6A.5 shall be signalled to the UE.

During time period T1:

With the received P-CCPCH power level set to -60 dBm, the value of the DPCH constant value shall be adjusted such that the mean UE output power is -10 dBm. These conditions are held steady during period T1.

During time period T2:

At the beginning of time period T2, the received P-CCPCH power level shall be decreased by 20 dB.

A.6A.2.1.2 Test Requirements

A.6A.2.1.2.1 Interactive or Background, PS, UL: 64 kbps

The UE shall have stopped using UL_TFC8 and UL_TFC9 within 170 ms from beginning of time period T2.

The rate of correct TFC selections observed during repeated tests shall be at least 90%.

NOTE: The delay from the begining of T2 can be expressed as:

$$T_{detect_block} + T_{notify} + T_{modify} + T_{L1_proc} + T_{align_TTI} + T_{offset}$$

where:

T_{detect_block} Equal to 30 ms, the time needed to detect that UL_TFC8 and UL_TFC9 can no longer be supported. This defines the maximum time to detect that the *Elimination* criterion is fulfilled for UL_TFC8 and UL_TFC9.

T_{notify}	Equal to 15 ms, the time allowed for MAC to indicate to higher layers that UL_TFC8 and UL_TFC9 can no longer be supported.
T_{modify}	Equal to MAX(T_{adapt_max},T_{TTI}) = MAX(0, 40)=40ms
T_{adapt_max}	Equals to 0 ms for the case without codec.
T_{TTI}	See section 6A.2. Equals 40 ms in the test case.
T_{L1_proc}	Equals 35 ms.
T_{align_TTI}	Align with the longest uplink TTI where the new TFC can be selected. The worst case equals 40ms in this test case.
T_{offset}	Equal to 10 ms, the maximum time between reception of the DL beacon timeslot and the UL DPCH timeslot.

A.6A.2.2 1.28 Mcps TDD option

A.6A.2.2.1 Test Purpose and Environment

The purpose is to verify the UE blocks (stops using) a currently used TFC when the UE output power is not sufficient to support that TFC. This test will verify the general requirement on TFC selection in section 6.4.

A.6A.2.2.1.1 Interactive or Background, PS, UL: 64 kbps

The test will verify the general requirement on TFC selection in section 6.4 for a RAB intended for packet data services, i.e. Interactive or Background, PS, UL: 64kbps as defined in TS 34.108.

The test parameters are given in Table A.6A.13 , A.6A.14 and Table A.6A.15 below. The test consists of 2 successive time periods, with a time duration of T1 and T2 respectively.

Details on the UL reference RAB in table A.6A.13 and A.6A.14 can be found in TS 34.108 section "Interactive or background / UL:64 DL: 64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH".

Table A.6A.13: UL reference RAB, Interactive or Background

	TFI	64 kbps RAB (20ms TTI)	DCCH 3.4kbps (40ms TTI)
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Table A.6A.14: UL TFCI

TFCI	(64 kbps RAB, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF0, TF1)
UL_TFC2	(TF1, TF0)
UL_TFC3	(TF1, TF1)
UL_TFC4	(TF2, TF0)
UL_TFC5	(TF2, TF1)
UL_TFC6	(TF3, TF0)
UL_TFC7	(TF3, TF1)
UL_TFC8	(TF4, TF0)
UL_TFC9	(TF4, TF1)

Table A.6A.15: General test parameters

Parameter	Unit	Value	Comment
TFCS size		10	
TFCS		UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3, UL_TFC4, UL_TFC5, UL_TFC6, UL_TFC7, UL_TFC8, UL_TFC9	
Power Control		On	
TPC step size	dB	1	
Maximum allowed UL TX power	dBm	21	
T1	s	30	
T2	s	10	

The test shall be performed in AWGN channel propagation conditions.

The radio conditions in the test shall be sufficient, so that decoding of the TPC commands can be made without errors.

The amount of available user data shall be sufficient to allow uplink transmission at the highest bit rate (UL_TFC8 or UL_TFC9) during the entire test and it shall be ensured that the UE is using UL_TFC8 or UL_TFC9 at the end of T1.

The test shall be performed in the following way:

Before time period T1:

The allowed TFCS according to table A.x.z shall be signalled to the UE.

During time period T1:

The system simulator shall ensure that the UE output power is commanded to be between 9to 10 dB below the UE Maximum allowed UL TX power.

During time period T2:

The system simulator shall continously send TPC_cmd=Up to the UE from the beginning of T2 until the end of T2.

NOTE: This will emulate that UL_TFC8 to UL_TFC9 can not be supported beacuse the UE reaches the maximum UL Tx power and still UTRAN is sending power-up commands. The time from the beginning of T2 until the UE blocks (stops using) UL_TFC8 and UL_TFC9 shall be measured.

A.6A.2.2.2 Test Requirements

A.6A.2.2.2.1 Interactive or Background, PS, UL: 64 kbps

The UE shall have stopped using UL_TFC8 and UL_TFC9 within [TBD] ms from beginning of time period T2.

The rate of correct tests observed during repeated tests shall be at least 90%.

NOTE: The delay from the begining of T2 can be expressed as: $T_{ramp} + T_{detect_block} + T_{notify} + T_{modify} + T_{L1_proc} + T_{align_TTI}$, where:

T_{ramp} Margin added for the increase of UE output power to the UE maximum power. A margin of 7 frames (70ms) is used, i.e. 14 TPC commands.

T_{detect_block} The time needed to detect that UL_TFC8 and UL_TFC9 can no longer be supported, i.e. defines the maximum time to detect that the *Limited TFC Set* criterion is fulfilled for UL_TFC8 and UL_TFC9. This figure is currently TBD as X and Y in the general requirement, see section 6.4.2, are not finalised yet.

T_{notify} Equal to [15] ms, the time allowed for MAC to indicate to higher layers that UL_TFC8 and UL_TFC9 can no longer be supported.

T_{modify} Equal to $MAX(T_{adapt_max}, T_{TTI}) = MAX(0, 40)=40ms$

T_{adapt_max} Equals to 0ms for the case without codec.

T_{L1_proc} Equals 15ms.

T_{align_TTI} Align with the longest uplink TTI where the new TFC can be selected. The worst case equals 40ms in this test case.

T_{TTI} See section 6.4.2. Equals 40 ms in the test case.

This gives a maximum delay of (70 + T_{detect_block} + [15] + 40 + 15 + 40) ms from the beginning of T2.

A.6A.2.3 7.68 Mcps TDD option

A.6A.2.3.1 Test Purpose and Environment

The purpose is to verify the UE blocks (stops using) a currently used TFC when the UE output power is not sufficient to support that TFC. This test will verify the general requirement on TFC selection in section 6A.2.

A.6A.2.3.1.1 Interactive or Background, PS, UL: 64 kbps

The test will verify the general requirement on TFC selection in section 6A.2 for a 64 kbps UL reference RAB intended for packet data services, i.e. Interactive or Background, PS as defined in TS 34.108 and multiplexed to a 3.4 kbps DCCH.

The test parameters are given in Table A.6A.16, A.6A.17, A.6A.18 and Table A.6A.19 below. The test consists of 2 successive time periods, with a time duration of T1 and T2 respectively.

Details on the UL reference RAB in table A.6A.17 is similar to that in TS 34.108 section "Interactive or background / UL:64 DL: 64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH" with the exception that the Spreading Factor is 32 here instead of 16.

Table A.6A.16: General test parameters

Parameter	Unit	Value	Comment
TFCS size		10	
TFCS		UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3, UL_TFC4, UL_TFC5, UL_TFC6, UL_TFC7, UL_TFC8, UL_TFC9	Gain factors for TFC0 to TFC9 shall be set to 1.
Power Control		On	
Active cell		Cell 1	
Maximum allowed UL TX power	dBm	0	Value of IE "Maximum allowed UL Tx power
Primary CCPCH Tx power	dBm	18	Value of IE "Primary CCPCH Tx power"
UL timeslot interference	dBm	-80	Value of IE "UL timeslot interference" This value shall apply to all timeslots
α		1	IE "Alpha" either not sent or explicitly set to value
UL target SIR	dB	6	
DPCH constant offset	dB	adjustable	Value of IE "DPCH constant power
T1	s	10	
T2	s	10	

Table A.6A.17: Transport channel parameters for UL reference RAB, Interactive or Background and DCCH

Parameter	Unit	64 kbps RAB	DCCH 3.4kbps
Transport Channel Number		1	2
Transmission Time Interval	ms	20	40
Type of Error Protection		Turbo coding	Convolutional coding
Coding Rate		1/3	
Size of CRC	bits	16	
Transport Block Size	bits	336	148
Transport Block Set Size	bits	336*B (B=0,1,2,3,4)	148*B (B=0,1)
Transport Format Set	bits		
TF0		0x336	0x148
TF1		1x336	1x148
TF2		2x336	N/A
TF3		3x336	N/A
TF4		4x336	N/A

Table A.6A.18: UL TFCI

TFCI	(64 kbps RAB, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF0, TF1)
UL_TFC2	(TF1, TF0)
UL_TFC3	(TF1, TF1)
UL_TFC4	(TF2, TF0)
UL_TFC5	(TF2, TF1)
UL_TFC6	(TF3, TF0)
UL_TFC7	(TF3, TF1)
UL_TFC8	(TF4, TF0)
UL_TFC9	(TF4, TF1)

Table A.6A.19: Physical channel parameters

Parameter	Unit	Value
UL timeslot		7
Burst type		1
Resource units		{(spreading factor 32 x 1 code) + (spreading factor 8 x 1 code)} x 1 time slot
TFCI	Bits	16
TPC	Bits	2
Frame allocation		Continuous

The test shall be performed in AWGN channel propagation conditions. The P-CCPCH in the DL shall be transmitted in timeslot 0.

The amount of available user data shall be sufficient to allow uplink transmission at the highest bit rate (UL_TFC8 or UL_TFC9) during the entire test and it shall be ensured that the UE is using UL_TFC8 or UL_TFC9 at the end of T1.

The test shall be performed in the following way:

Before time period T1:

The allowed TFCS according to table A.6A.16 shall be signalled to the UE.

During time period T1:

With the received P-CCPCH power level set to -60 dBm, the value of the DPCH constant value shall be adjusted such that the mean UE output power is -10 dBm. These conditions are held steady during period T1.

During time period T2:

At the beginning of time period T2, the received P-CCPCH power level shall be decreased by 20 dB.

A.6A.2.3.2 Test Requirements

A.6A.2.3.2.1 Interactive or Background, PS, UL: 64 kbps

The UE shall have stopped using UL_TFC8 and UL_TFC9 within 170 ms from beginning of time period T2.

The rate of correct TFC selections observed during repeated tests shall be at least 90%.

NOTE: The delay from the beginning of T2 can be expressed as:

$$T_{detect_block} + T_{notify} + T_{modify} + T_{L1_proc} + T_{align_TTI} + T_{offset}$$

where:

T_{detect_block}	Equal to 30 ms, the time needed to detect that UL_TFC8 and UL_TFC9 can no longer be supported. This defines the maximum time to detect that the *Elimination* criterion is fulfilled for UL_TFC8 and UL_TFC9.
T_{notify}	Equal to 15 ms, the time allowed for MAC to indicate to higher layers that UL_TFC8 and UL_TFC9 can no longer be supported.
T_{modify}	Equal to $MAX(T_{adapt_max}, T_{TTI}) = MAX(0, 40)=40ms$
T_{adapt_max}	Equals to 0 ms for the case without codec.
T_{TTI}	See section 6A.2. Equals 40 ms in the test case.
T_{L1_proc}	Equals 35 ms.
T_{align_TTI}	Align with the longest uplink TTI where the new TFC can be selected. The worst case equals 40ms in this test case.
T_{offset}	Equal to 10 ms, the maximum time between reception of the DL beacon timeslot and the UL DPCH timeslot.

A.7 Timing characteristics

A.7.1 Timing Advance

A.7.1.1 3.84 Mcps TDD option

A.7.1.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirements on timing advance adjustment accuracy and timing advance adjustment delay in section 7.1.1.

The test parameters are given in table A.7.1 and table A.7.1A. The test consists of two successive time periods, with a time duration of T1and T2 respectively. At the start of time duration T1, the UE shall transmit with the Uplink Timing Advance value set to zero, i.e. Timing Advance disabled.

During time period T1, UTRAN shall send an Uplink Physical Channel control message with activation time at the beginning of T2. The Uplink Physical Channel Control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T2 is greater than or equal to the RRC procedure delay as defined in [16].

Table A.7.1.1: General test parameters for Timing Advance test

Parameter		Unit	Value	Comment
DCH parameters			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Timing Advance value		0	IE "Uplink timing advance" value zero or IE "Uplink timing advance control" value disabled.
Final condition	Timing Advance value		5	IE "Uplink timing advance" value set to 5.
Monitored cell list size			6 TDD neighbors on Channel 1	
T_{SI}		s	1.28	The value shall be used for all cells in the test.
T1		s	5	
T2		s	5	

Table A.7.1.2: Cell specific test parameters for Timing Advance test

Parameter	Unit	Cell 1			
DL timeslot number		**0**		**2**	
		T1	T2	T1	T2
UTRA RF Channel Number		Channel 1			
PCCPCH_Ec/Ior	dB	-3		n.a.	
SCH_Ec/Ior	dB	-9		n.a.	
SCH_t_{offset}	dB	0		n.a.	
DPCH_Ec/Ior	dB	n.a.		Note 1	
OCNS_Ec/Ior	dB	-3,12		Note 2	
$\hat{I}_{or}/I_{oc}$	dB	3			
I_{oc}	dBm/ 3,84 MHz	-70			
Propagation Condition		AWGN			
Note 1: The DPCH level is controlled by the power control loop Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Ior .					

A.7.1.1.2 Test Requirements

The UE shall apply the signalled Timing Advance value to the UL DPCH transmission timing at the designated activation time, i.e the beginning of time period T2. The Timing Advance adjustement accuracy shall be within the limits specified in section 7.1.1.2.

The rate of correct Timing Advance adjustments observed during repeated tests shall be at least 90%.

A.7.1.2 1.28 Mcps TDD option

A.7.1.2.1 Test Purpose and Environment

Timing advance is applied to adjust the UE transmit time in order to ensure that all the signal received by the BS is synchronised.

The purpose of this test is to verify the ability of the UE to adjust its timing advance according to the SS commands within the specified accuracy defined in section 7.1.2.

The test parameters are given in table A.7.1.3 and table A.7.1.4. The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 2.

Table A.7.1.3: General test parameters for Timing Advance test

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2
Power Control		On	
Target quality value on DTCH	BLER	0.01	
Monitored cell list size		6 TDD neighbors on Channel 1	

Table A.7.1.4: Cell specific test parameters for Timing Advance test

Parameter	Unit	Cell 1	
Timeslot Number		0	DwPTS
UTRA RF Channel Number (NOTE)		Channel 1	
PCCPCH_Ec/Ior	dB	-3	
DwPCH_Ec/Ior	dB		0
OCNS_Ec/Ior	dB	-3	
$\hat{I}_{or}/I_{oc}$	dB	6	6
I_{oc}	dBm/ 1.28 MHz	-80	
PCCPCH RSCP	dBm	-77	
Propagation Condition		AWGN	
NOTE: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency.			

A.7.1.2.2 Test procedure

1) Configure the UE transmitter to enable synchronisation steps of size 1/8 chip

2) send synchronisation commands to the UE under test

3) measure the received time of the uplink signal.

4) check that the measured UE synchronisation control range is within the limits defined in section 7.1.2.1.1.1 Table 7.1

A.7.1.2.3 Test Requirements

The rate of correct uplink synchronisation control range observed during repeated tests shall be at least 90%.

A.7.1.3 7.68 Mcps TDD option

A.7.1.3.1 Test Purpose and Environment

The purpose of this test is to verify the requirements on timing advance adjustment accuracy and timing advance adjustment delay in section 7.1.3.

The test parameters are given in table A.7.5 and table A.7.6. The test consists of two successive time periods, with a time duration of T1and T2 respectively. At the start of time duration T1, the UE shall transmit with the Uplink Timing Advance value set to zero, i.e. Timing Advance disabled.

During time period T1, UTRAN shall send an Uplink Physical Channel control message with activation time at the beginning of T2. The Uplink Physical Channel Control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T2 is greater than or equal to the RRC procedure delay as defined in [16].

Table A.7.1.5: General test parameters for Timing Advance test

Parameter		Unit	Value	Comment
DCH parameters			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Timing Advance value		0	IE "Uplink timing advance" value zero or IE "Uplink timing advance control" value disabled.
Final condition	Timing Advance value		5	IE "Uplink timing advance" value set to 5.
Monitored cell list size			6 TDD neighbors on Channel 1	
T_{SI}		s	1.28	The value shall be used for all cells in the test.
T1		s	5	
T2		s	5	

Table A.7.1.6: Cell specific test parameters for Timing Advance test

Parameter	Unit	Cell 1			
DL timeslot number		**0**		**2**	
		T1	T2	T1	T2
UTRA RF Channel Number		Channel 1			
PCCPCH_Ec/Ior	dB	-3		n.a.	
SCH_Ec/Ior	dB	-9		n.a.	
SCH_t_{offset}	dB	0		n.a.	
DPCH_Ec/Ior	dB	n.a.		Note 1	
OCNS_Ec/Ior	dB	-3,12		Note 2	
$\hat{I}_{or}/I_{oc}$	dB	3			
I_{oc}	dBm/ 7,68 MHz	-70			
Propagation Condition		AWGN			
Note 1: The DPCH level is controlled by the power control loop Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Ior .					

A.7.1.3.2 Test Requirements

The UE shall apply the signalled Timing Advance value to the UL DPCH transmission timing at the designated activation time, i.e the beginning of time period T2. The Timing Advance adjustement accuracy shall be within the limits specified in section 7.1.3.2.

The rate of correct Timing Advance adjustments observed during repeated tests shall be at least 90%.

A.7.2 Cell synchronization accuracy

NOTE: This section is included for consistency with numbering with section 7; currently no test covering requirements in section 7.2 exists.

A.7.3 UE Transmit Timing for 3.84 Mcps TDD option

NOTE: This section is included for consistency with numbering with section 7; currently no test covering requirements in section 7.3 exists.

A.8 UE Measurements Procedures

A.8.1 TDD intra frequency measurements

A.8.1.1 Event 1G triggered reporting in AWGN propagation conditions

A.8.1.1.1 Test Purpose and Environment

A.8.1.1.1.1 3.84 Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of events. This test will partly verify the requirements in section 8.1.2 and section 9.1.

The test parameters are given in Table A.8.1.1 and A.8.1.1A below. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. Three cells shall be present in the test, cell 1 being the serving cell and cell 2 and cell 3 being neighbour cells on the used frequency. All cells shall be synchronised, i.e. share the same frame and timeslot timing.

In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G shall be used, and that P-CCPCH RSCP shall be reported together with Event 1G. The Measurement control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T1 is at least equal to the RRC procedure delay as defined in [16].

The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2. The DL DPCH shall be transmitted in timeslot 2 and the UL DPCH shall be transmitted in timeslot 10. The TTI of the uplink DCCH shall be 20ms.

Table A.8.1.1: General test parameters for Event 1G triggered reporting in AWGN propagation condition

Parameter		Unit	Value	Comment
DCH parameters			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2, Cell 3	
Final condition	Active cell		Cell 1	
O		dB	0	Cell individual offset. This value shall be used for all cells in the test.
Hysteresis		dB	0	
Time to Trigger		ms	0	
Threshold used frequency		dBm	-70	Applicable for Event 1G
Filter coefficient			0	
Monitored cell list size			12 TDD neighbours on Channel 1	
T1		s	6	
T2		s	6	
T3		s	6	

Table A.8.1.1A: Cell specific parameters for Event 1G triggered correct reporting in AWGN propagation condition

Parameter	Unit	Cell 1			Cell 2			Cell 3		
		T1	T2	T3	T1	T2	T3	T1	T2	T3
DL timeslot number		**0**			**0**			**0**		
UTRA RF Channel Number		Channel 1			Channel 1			Channel 1		
PCCPCH_Ec/Ior	dB	-3			-3			-3		
SCH_Ec/Ior	dB	-9			-9			-9		
SCH_t_{offset}		0			5			10		
OCNS_Ec/Ior	dB	-3,12			-3,12			-3,12		
$\hat{I}_{or}/I_{oc}$	dB	7	5		5	7	-Inf	-Inf		7
PCCPCH RSCP	dBm	-66	-68		-68	-66	-Inf	-Inf		-66
I_{oc}	dBm / 3,84 MHz	-70								
Propagation Condition		AWGN								

A.8.1.1.1.2 1.28 Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of events. This test will partly verify the requirements in section 8.1A.2 and section 9.1.

The test parameters are given in Table A.8.1.1B and A.8.1.1C below. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. Three cells shall be present in the test, cell 1 being the serving cell and cell 2 and cell 3 being neighbour cells on the used frequency. All cells shall be synchronised, i.e. share the same frame and timeslot timing.

In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G shall be used, and that P-CCPCH RSCP shall be reported together with Event 1G reporting. The Measurement control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T1 is at least equal to the RRC procedure delay as defined in [16]. The cell specific test parameters are given in Table A.8.1.1C below.

The TTI of the uplink DCCH shall be 40ms.

Table A.8.1.1B: General test parameters for Event 1G triggered reporting in AWGN propagation condition

Parameter	Unit	Value	Comment
DPCH parameters active cell		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A. The DPCH is located in an other timeslot than 0
Power Control		On	
Target quality value on DTCH	BLER	0.01	
Active cell		Cell 1	
Neighbour cell		Cell 2, Cell 3	
O	dB	0	Cell individual offset. This value shall be used for all cells in the test.
Hysteresis	dB	0	
Time to Trigger	ms	0	
Filter coefficient		0	
Monitored cell list size		12 TDD neighbours on Channel 1	
T1	s	6	
T2	s	6	
T3	s	6	

Table A.8.1.1C: Cell specific parameters for Event 1G triggered correct reporting in AWGN propagation condition

Parameter	Unit	Cell 1						Cell 2						Cell 3					
DL timeslot number		0			DwPTS			0			DwPTS			0			DwPTS		
		T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
UTRA RF Channel Number (NOTE 2)		Channel 1						Channel 1						Channel 1					
PCCPCH_Ec/Ior	dB	-3						-3						-3					
DwPCH_Ec/Ior	dB				0						0						0		
OCNS_Ec/Ior	dB	-3						-3						-3					
$\hat{I}_{or}/I_{oc}$	dB	7	4		7	4		4	7	-Inf	4	7	-Inf	-Inf	6		-Inf		6
PCCPCH RSCP	dBm	-66	-69					-69	-66	-Inf				-Inf	-66				
I_{oc}	dBm/ 1,28 MHz	-70																	
Propagation Condition		AWGN																	
Note 1: The DPCH of all cells are located in a timeslot other than 0. Note 2: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test.																			

A.8.1.1.1.3 7.68 Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of events. This test will partly verify the requirements in section 8.1B.2 and section 9.1.

The test parameters are given in Table A.8.1.1D and A.8.1.1E below. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. Three cells shall be present in the test, cell 1 being the serving cell and cell 2 and cell 3 being neighbour cells on the used frequency. All cells shall be synchronised, i.e. share the same frame and timeslot timing.

In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G shall be used, and that P-CCPCH RSCP shall be reported together with Event 1G. The Measurement control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T1 is at least equal to the RRC procedure delay as defined in [16].

The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2. The DL DPCH shall be transmitted in timeslot 2 and the UL DPCH shall be transmitted in timeslot 10. The TTI of the uplink DCCH shall be 20ms.

Table A.8.1.1D: General test parameters for Event 1G triggered reporting in AWGN propagation condition

Parameter		Unit	Value	Comment
DCH parameters			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2, Cell 3	
Final condition	Active cell		Cell 1	
O		dB	0	Cell individual offset. This value shall be used for all cells in the test.
Hysteresis		dB	0	
Time to Trigger		ms	0	
Threshold used frequency		dBm	-70	Applicable for Event 1G
Filter coefficient			0	
Monitored cell list size			12 TDD neighbours on Channel 1	
T1		s	6	
T2		s	6	
T3		s	6	

Table A.8.1.1E: Cell specific parameters for Event 1G triggered correct reporting in AWGN propagation condition

Parameter	Unit	Cell 1			Cell 2			Cell 3		
		T1	T2	T3	T1	T2	T3	T1	T2	T3
DL timeslot number		**0**			**0**			**0**		
UTRA RF Channel Number		Channel 1			Channel 1			Channel 1		
PCCPCH_Ec/Ior	dB	-3			-3			-3		
SCH_Ec/Ior	dB	-9			-9			-9		
SCH_t_{offset}		0			5			10		
OCNS_Ec/Ior	dB	-3,12			-3,12			-3,12		
$\hat{I}_{or}/I_{oc}$	dB	7	5		5	7	-Inf	-Inf		7
PCCPCH RSCP	dBm	-66	-68		-68	-66	-Inf	-Inf		-66
I_{oc}	dBm / 7,68 MHz	-70								
Propagation Condition		AWGN								

A.8.1.1.2 Test Requirements

A.8.1.1.2.1 3.84Mcps TDD option

The UE shall send one Event 1G triggered measurement report for Cell 2 with a measurement reporting delay less than 200ms from the beginning of time period T2.

The UE shall send one Event 1G triggered measurement report for Cell 3 with a measurement reporting delay less than 800ms from the beginning of time period T3.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of events correctly reported during repeated tests shall be at least 90%.

A.8.1.1.2.2 1.28Mcps TDD option

The UE shall send one Event 1G triggered measurement report for cell 2, with a measurement reporting delay less than 280ms from the beginning of time period T2.

The UE shall send one Event 1G triggered measurement report for Cell 3 with a measurement reporting delay less than 880ms from the beginning of time period T3.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of events correctly reported during repeated tests shall be at least 90%.

A.8.1.1.2.3 7.68Mcps TDD option

The UE shall send one Event 1G triggered measurement report for Cell 2 with a measurement reporting delay less than 200ms from the beginning of time period T2.

The UE shall send one Event 1G triggered measurement report for Cell 3 with a measurement reporting delay less than 800ms from the beginning of time period T3.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of events correctly reported during repeated tests shall be at least 90%.

A.8.1.2 Event 1H and 1I triggered reporting in AWGN propagation conditions

A.8.1.2.1 3.84 Mcps TDD option

A.8.1.2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of event 1H and event 1I. This test will partly verify the requirements in section 8.1.2 and section 9.1.

The test parameters are given in Table A.8.1.2, Table A.8.1.2A and Table A.8.1.2B below. The test consists of five successive time periods, with a time duration of T1, T2, T3, T4 and T5 respectively. Two cells shall be present in the test, cell 1 being the current serving cell and cell 2 being a neighbour cell on the used frequency.

In the measurement control information it shall be indicated to the UE that event-triggered reporting with event 1H and event 1I shall be used and that Timeslot ISCP and P-CCPCH RSCP shall be reported together with event 1H and 1I. Measurement control information shall be sent to the UE before the beginning of time period T1.

The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2. The UL DPCH shall be transmitted in timeslot 10. In addition, timeslots 3 and 4 shall be allocated as DL timeslots. Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing.

Table A.8.1.2: General test parameters for correct event 1H and 1I reporting in AWGN propagation condition

Parameter		Unit	Value	Comment
DCH parameters			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final condition	Active cell		Cell 1	
HCS			Not used	
O		dB	0	Cell individual offset. This value shall be used for all cells in the test.
Timeslot list cell 1			2, 3, 4	Timeslot numbers in IE "Cell info" for Cell 1
Timeslot list cell 2			4	Timeslot numbers in IE "Cell info" for Cell 2
Threshold used frequency		dBm	-68	Threshold 1 applicable for event 1H, cell 1 timeslots 2, 4 and cell 2 timeslot 4
Threshold used frequency		dBm	-73	Threshold 2 applicable for event 1H, cell 1 timeslots 2, 3, 4 and cell 2 timeslot 4
Threshold used frequency		dBm	-67	Applicable for event 1I, cell 1 timeslots 2, 4 and cell 2 timeslot 4
Hysteresis		dB	0	
Time to Trigger		ms	0	
Filter coefficient			0	
Monitored cell list size			6 TDD neighbours on Channel 1	Cell 2 shall belong to the monitored set
T1		s	5	
T2		s	5	
T3		s	5	
T4		s	5	
T5		s	5	

Table A.8.1.2A: Cell 1 specific test parameters for correct event 1H and 1I reporting in AWGN propagation condition

Parameter	Unit	Cell 1									
		T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
UTRA RF Channel Number		Channel 1									
DL timeslot number		**0**					**2**				
PCCPCH_Ec/Ior	dB	-3					n.a.				
SCH_Ec/Ior	dB	-9					n.a.				
SCH_t_{offset}	dB	5					n.a.				
DPCH_Ec/Ior	dB	n.a.					Note 1				
OCNS_Ec/Ior	dB	-3,12					Note 2				
$\hat{I}_{or}/I_{oc}$	dB	4					4				
PCCPCH RSCP	dBm	-69					n.a.				
I_{oc}	dBm / 3,84 MHz	-70									
Propagation Condition		AWGN									
DL timeslot number		**3**					**4**				
PCCPCH_Ec/Ior	dB	n.a.					n.a.				
SCH_Ec/Ior	dB	n.a.					n.a.				
SCH_t_{offset}	dB	n.a.					n.a.				
DPCH_Ec/Ior	dB	n.a.					n.a.				
OCNS_Ec/Ior	dB	0					0				
$\hat{I}_{or}/I_{oc}$	dB	3					0				6
PCCPCH RSCP	dBm	n.a.					n.a.				
I_{oc}	dBm / 3,84 MHz	-70									
Propagation Condition		AWGN									
Note 1: The DPCH level is controlled by the power control loop Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Ior											

Table A.8.1.2B: Cell 2 specific test parameters for correct event 1H and 1I reporting in AWGN propagation condition

Parameter	Unit	Cell 2									
		T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
UTRA RF Channel Number		Channel 1									
DL timeslot number		**0**					**2**				
PCCPCH_Ec/Ior	dB	-3					n.a.				
SCH_Ec/Ior	dB	-9					n.a.				
SCH_t_{offset}	dB	10					n.a.				
DPCH_Ec/Ior	dB	n.a.					n.a.				
OCNS_Ec/Ior	dB	-3,12					0				
$\hat{I}_{or}/I_{oc}$	dB	1					0	6	0		
PCCPCH RSCP	dBm	-72					n.a.				
I_{oc}	dBm / 3,84 MHz	-70									
Propagation Condition		AWGN									
DL timeslot number		**3**					**4**				
PCCPCH_Ec/Ior	dB	n.a.					n.a.				
SCH_Ec/Ior	dB	n.a.					n.a.				
SCH_t_{offset}	dB	n.a.					n.a.				
DPCH_Ec/Ior	dB	n.a.					n.a.				
OCNS_Ec/Ior	dB	0					0				
$\hat{I}_{or}/I_{oc}$	dB	3					6				0
PCCPCH RSCP	dBm	n.a.					n.a.				
I_{oc}	dBm / 3,84 MHz	-70									
Propagation Condition		AWGN									

A.8.1.2.1.2 Test Requirements

The UE shall send one event 1I triggered measurement report, with a measurement reporting delay less than 400 ms from the beginning of time period T2.

The UE shall send one event 1H triggered measurement report, with a measurement reporting delay less than 400 ms from the beginning of time period T3.

The UE shall send one event 1H triggered measurement report, with a measurement reporting delay less than 400 ms from the beginning of time period T4.

The UE shall send one event 1I triggered measurement report, with a measurement reporting delay less than 400 ms from the beginning of time period T5.

The UE shall not send event 1H or 1I triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.1.2.2 1.28 Mcps TDD option

A.8.1.2.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of event 1H and event 1I. This test will partly verify the requirements in section 8.1A.2 and section 9.1.

The test parameters are given in Table A.8.1.2C, Table A.8.1.2D and Table A.8.1.2E below. The test consists of four successive time periods, with a time duration of T1, T2, T3 and T4 respectively. Two cells shall be present in the test, cell 1 being the current serving cell and cell 2 being a neighbour cell on the used frequency.

In the measurement control information it shall be indicated to the UE that event-triggered reporting with event 1H and event 1I shall be used and that Timeslot ISCP and P-CCPCH RSCP shall be reported together with event 1H and 1I. Measurement control information shall be sent to the UE before the beginning of time period T1.

The UL DPCH shall be transmitted in timeslot 2. In addition, timeslots 5 and 6 shall be allocated as DL timeslots.

Table A.8.1.2C: General test parameters for correct event 1H and 1I reporting in AWGN propagation condition

Parameter		Unit	Value	Comment
DCH parameters active cell			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final condition	Active cell		Cell 1	
O		dB	0	Cell individual offset. This value shall be used for all cells in the test.
Timeslot list cell 1			5, 6	Timeslot numbers in IE "Cell info" for Cell 1
Timeslot list cell 2			6	Timeslot numbers in IE "Cell info" for Cell 2
Threshold used frequency		dBm	-68	Applicable for event 1H, cell 1 timeslots 5, 6 and cell 2 timeslot 6
Threshold used frequency		dBm	-66	Applicable for event 1I, cell 1 timeslots 5, 6 and cell 2 timeslot 6
Hysteresis		dB	0	
Time to Trigger		ms	0	
Filter coefficient			0	
Monitored cell list size			6 TDD neighbours on Channel 1	Cell 2 shall belong to the monitored set
T1		s	5	
T2		s	5	
T3		s	5	
T4		s	5	

Table A.8.1.2D: Cell 1 specific test parameters for correct event 1H and 1I reporting in AWGN propagation condition

Parameter	Unit	Cell 1											
		T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4
UTRA RF Channel Number (Note 3)		Channel 1											
DL timeslot number		0				5				6			
PCCPCH_Ec/Ior	dB	-3											
DPCH_Ec/Ior	dB					Note 1							
OCNS_Ec/Ior	dB	-3				Note 2				0			
$\hat{I}_{or}/I_{oc}$	dB	4				3				0	6		0
PCCPCH RSCP	dBm	-69				n.a.				n.a.			
I_{oc}	dBm / 1.28 MHz	-70											

Note 1: The DPCH level is controlled by the power control loop
Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Ior
Note 3: In the case of multi-frequency network, the UARA RF Channel Number can be set for the primary frequency in this test.

Table A.8.1.2E: Cell 2 specific test parameters for correct event 1H and 1I reporting in AWGN propagation condition

Parameter	Unit	Cell 2							
		T1	T2	T3	T4	T1	T2	T3	T4
UTRA RF Channel Number (Note 1)		Channel 1							
DL timeslot number		0				6			
PCCPCH_Ec/Ior	dB	-3							
DPCH_Ec/Ior	dB								
OCNS_Ec/Ior	dB	-3				0			
$\hat{I}_{or}/I_{oc}$	dB	4				6		0	
PCCPCH RSCP	dBm	-69				n.a.			
I_{oc}	dBm / 1.28 MHz	-70							
Note1: In the case of multi-frequency network, the UARA RF Channel Number can be set for the primary frequency in this test.									

A.8.1.2.2.2 Test Requirements

The UE shall send one event 1I triggered measurement report, with a measurement reporting delay less than 480 ms from the beginning of time period T2.

The UE shall send one event 1H triggered measurement report, with a measurement reporting delay less than 480 ms from the beginning of time period T3.

The UE shall send one event 1H triggered measurement report, with a measurement reporting delay less than 480 ms from the beginning of time period T4.

The UE shall not send event 1H or 1I triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.1.2.3 7.68 Mcps TDD option

A.8.1.2.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of event 1H and event 1I. This test will partly verify the requirements in section 8.1B.2 and section 9.1.

The test parameters are given in Table A.8.1.2F, Table A.8.1.2G and Table A.8.1.2H below. The test consists of five successive time periods, with a time duration of T1, T2, T3, T4 and T5 respectively. Two cells shall be present in the test, cell 1 being the current serving cell and cell 2 being a neighbour cell on the used frequency.

In the measurement control information it shall be indicated to the UE that event-triggered reporting with event 1H and event 1I shall be used and that Timeslot ISCP and P-CCPCH RSCP shall be reported together with event 1H and 1I. Measurement control information shall be sent to the UE before the beginning of time period T1.

The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2. The UL DPCH shall be transmitted in timeslot 10. In addition, timeslots 3 and 4 shall be allocated as DL timeslots. Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing.

Table A.8.1.2F: General test parameters for correct event 1H and 1I reporting in AWGN propagation condition

Parameter		Unit	Value	Comment
DCH parameters			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final condition	Active cell		Cell 1	
HCS			Not used	
O		dB	0	Cell individual offset. This value shall be used for all cells in the test.
Timeslot list cell 1			2, 3, 4	Timeslot numbers in IE "Cell info" for Cell 1
Timeslot list cell 2			4	Timeslot numbers in IE "Cell info" for Cell 2
Threshold used frequency		dBm	-68	Threshold 1 applicable for event 1H, cell 1 timeslots 2, 4 and cell 2 timeslot 4
Threshold used frequency		dBm	-73	Threshold 2 applicable for event 1H, cell 1 timeslots 2, 3, 4 and cell 2 timeslot 4
Threshold used frequency		dBm	-67	Applicable for event 1I, cell 1 timeslots 2, 4 and cell 2 timeslot 4
Hysteresis		dB	0	
Time to Trigger		ms	0	
Filter coefficient			0	
Monitored cell list size			6 TDD neighbours on Channel 1	Cell 2 shall belong to the monitored set
T1		s	5	
T2		s	5	
T3		s	5	
T4		s	5	
T5		s	5	

Table A.8.1.2G: Cell 1 specific test parameters for correct event 1H and 1I reporting in AWGN propagation condition

Parameter	Unit	Cell 1									
		T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
UTRA RF Channel Number		Channel 1									
DL timeslot number		**0**					**2**				
PCCPCH_Ec/Ior	dB	-3					n.a.				
SCH_Ec/Ior	dB	-9					n.a.				
SCH_t_{offset}	dB	5					n.a.				
DPCH_Ec/Ior	dB	n.a.					Note 1				
OCNS_Ec/Ior	dB	-3,12					Note 2				
$\hat{I}_{or}/I_{oc}$	dB	4					4				
PCCPCH RSCP	dBm	-69					n.a.				
I_{oc}	dBm / 7,68 MHz	-70									
Propagation Condition		AWGN									
DL timeslot number		**3**					**4**				
PCCPCH_Ec/Ior	dB	n.a.					n.a.				
SCH_Ec/Ior	dB	n.a.					n.a.				
SCH_t_{offset}	dB	n.a.					n.a.				
DPCH_Ec/Ior	dB	n.a.					n.a.				
OCNS_Ec/Ior	dB	0					0				
$\hat{I}_{or}/I_{oc}$	dB	3					0				6
PCCPCH RSCP	dBm	n.a.					n.a.				
I_{oc}	dBm / 7,68 MHz	-70									
Propagation Condition		AWGN									

Note 1: The DPCH level is controlled by the power control loop
Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Ior

Table A.8.1.2H: Cell 2 specific test parameters for correct event 1H and 1I reporting in AWGN propagation condition

Parameter	Unit	Cell 2									
		T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
UTRA RF Channel Number		Channel 1									
DL timeslot number		**0**					**2**				
PCCPCH_Ec/Ior	dB	-3					n.a.				
SCH_Ec/Ior	dB	-9					n.a.				
SCH_t_{offset}	dB	10					n.a.				
DPCH_Ec/Ior	dB	n.a.					n.a.				
OCNS_Ec/Ior	dB	-3,12					0				
$\hat{I}_{or}/I_{oc}$	dB	1					0	6	0		
PCCPCH RSCP	dBm	-72					n.a.				
I_{oc}	dBm / 7,68 MHz	-70									
Propagation Condition		AWGN									
DL timeslot number		**3**					**4**				
PCCPCH_Ec/Ior	dB	n.a.					n.a.				
SCH_Ec/Ior	dB	n.a.					n.a.				
SCH_t_{offset}	dB	n.a.					n.a.				
DPCH_Ec/Ior	dB	n.a.					n.a.				
OCNS_Ec/Ior	dB	0					0				
$\hat{I}_{or}/I_{oc}$	dB	3					6				0
PCCPCH RSCP	dBm	n.a.					n.a.				
I_{oc}	dBm / 7,68 MHz	-70									
Propagation Condition		AWGN									

A.8.1.2.3.2 Test Requirements

The UE shall send one event 1I triggered measurement report, with a measurement reporting delay less than 400 ms from the beginning of time period T2.

The UE shall send one event 1H triggered measurement report, with a measurement reporting delay less than 400 ms from the beginning of time period T3.

The UE shall send one event 1H triggered measurement report, with a measurement reporting delay less than 400 ms from the beginning of time period T4.

The UE shall send one event 1I triggered measurement report, with a measurement reporting delay less than 400 ms from the beginning of time period T5.

The UE shall not send event 1H or 1I triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.1.3 Correct reporting of neighbours in fading propagation condition

A.8.1.3.1 3.84 Mcps TDD option

A.8.1.3.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE performs sufficient layer 1 filtering of the P-CCPCH RSCP measurement which is the base for Event 1G evaluation. This test is performed in fading propagation conditions and will partly verify the requirements in section 8.1.2.

The test parameters are given in Table A.8.1.3 and A.8.1.3A below. The test consists of one time period with time duration of T1. Two cells shall be present in the test, cell 1 being the current serving cell and cell 2 being a neighbour cell on the used frequency. Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing.

In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G shall be used, and that P-CCPCH RSCP shall be reported together with Event 1G. The Measurement control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T1 is at least equal to the RRC procedure delay as defined in [16].

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12. The TTI of the UL DCCH shall be 20ms.

Table A.8.1.3: General test parameters for correct reporting of neighbours in fading propagation condition

Parameter		Unit	Value	Comment
DCH parameters			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final condition	Active cell		Cell 1	
O		dB	0	Cell individual offset. This value shall be used for all cells in the test.
Hysteresis		dB	0	
Time to Trigger		ms	200	
Filter coefficient			0	
Monitored cell list size			6 TDD neighbours on Channel 1	Sent before the beginning of time period T1
T1		s	200	

Table A.8.1.3A: Cell specific test parameters for correct reporting of neighbours in fading propagation condition

Parameter	Unit	Cell 1		Cell 2	
		T1	T1	T1	T1
DL timeslot number		**0**	**8**	**0**	**8**
UTRA RF Channel Number		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3	n.a.	-3	n.a.
SCH_Ec/Ior	dB	-9	-9	-9	-9
SCH_t_{offset}		0	0	2	2
PICH_Ec/Ior	dB	n.a.	-3	n.a.	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	7	7	2	2
PCCPCH RSCP	dBm	-66	n.a.	-71	n.a.
I_{oc}	dBm/ 3,84 MHz	-70			
Propagation Condition		Case 4 as specified in TS25.102 Annex B			

A.8.1.3.1.2 Test Requirements

The number of Event 1G triggered measurement reports during time period T2 shall be less than 60.

A.8.1.3.2 (void)

A.8.1.3.3 7.68 Mcps TDD option

A.8.1.3.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE performs sufficient layer 1 filtering of the P-CCPCH RSCP measurement which is the base for Event 1G evaluation. This test is performed in fading propagation conditions and will partly verify the requirements in section 8.1.2B.

The test parameters are given in Table A.8.1.3B and A.8.1.3C below. The test consists of one time period with time duration of T1. Two cells shall be present in the test, cell 1 being the current serving cell and cell 2 being a neighbour cell on the used frequency. Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing.

In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G shall be used, and that P-CCPCH RSCP shall be reported together with Event 1G. The Measurement control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T1 is at least equal to the RRC procedure delay as defined in [16].

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12. The TTI of the UL DCCH shall be 20ms.

Table A.8.1.3B: General test parameters for correct reporting of neighbours in fading propagation condition

Parameter		Unit	Value	Comment
DCH parameters			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final condition	Active cell		Cell 1	
O		dB	0	Cell individual offset. This value shall be used for all cells in the test.
Hysteresis		dB	0	
Time to Trigger		ms	200	
Filter coefficient			0	
Monitored cell list size			6 TDD neighbours on Channel 1	Sent before the beginning of time period T1
T1		s	200	

Table A.8.1.3C: Cell specific test parameters for correct reporting of neighbours in fading propagation condition

Parameter	Unit	Cell 1		Cell 2	
		T1	T1	T1	T1
DL timeslot number		**0**	**8**	**0**	**8**
UTRA RF Channel Number		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3	n.a.	-3	n.a.
SCH_Ec/Ior	dB	-9	-9	-9	-9
SCH_t_{offset}		0	0	2	2
PICH_Ec/Ior	dB	n.a.	-3	n.a.	-3
OCNS_Ec/Ior	dB	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	7	7	2	2
PCCPCH RSCP	dBm	-66	n.a.	-71	n.a.
I_{oc}	dBm/ 7,68 MHz	-70			
Propagation Condition		Case 4 as specified in TS25.102 Annex B			

A.8.1.3.3.2 Test Requirements

The number of Event 1G triggered measurement reports during time period T2 shall be less than 60.

A.8.2 TDD inter frequency measurements

A.8.2.1 Correct reporting of neighbours in AWGN propagation condition

A.8.2.1.1 Test Purpose and Environment

A.8.2.1.1.1 3.84Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of an event when doing inter frequency measurements. The test will partly verify the requirements in section 8.1.2. and 9.1

The test consists of 2 successive time periods, with a time duration T1 and T2. The test parameters are given in tables A.8.2A and A.8.2B below. Two cells shall be present in the test, cell 1 being the serving cell and cell 2 being a UTRA TDD neighbour cell on the unused frequency. All cells shall be synchronised, i.e. share the same frame and timeslot timing.

In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used. P-CCPCH RSCP of the best cell on the unused frequency shall be reported together with Event 2C reporting. The Measurement control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T1 is at least equal to the RRC procedure delay as defined in [16].

The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2. The DL DPCH shall be transmitted in timeslot 1 and the UL DPCH shall be transmitted in timeslot 3. The TTI of the uplink DCCH shall be 20 ms.

Table A.8.2A: General test parameters for correct reporting of TDD inter frequency neighbours in AWGN propagation condition

Parameter		Unit	Value	Comment
DPCH parameters			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 annex A.2.2
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	UTRA TDD cell
	Neighbour cell		Cell 2	UTRA TDD cell
Threshold non used frequency		dB	-71	Applicable for event 2C
Hysteresis		dB	0	Applicable for event 2C
Time to Trigger		ms	0	
Filter coefficient			0	
Monitored cell list size			24 on channel 1 16 on channel 2	
T1		s	10	
T2		s	10	

Table A.8.2B: Cell specific test parameters for correct reporting of TDD inter frequency neighbours in AWGN propagation condition

Parameter	Unit	Cell 1				Cell 2			
Timeslot Number		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	15	15	15	15
PICH_Ec/Ior				-3	-3			-3	-3
OCNS		-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28
$\hat{I}_{or}/I_{oc}$	dB	3	3	3	3	-Infinity	9	-Infinity	9
I_{oc}	dBm/3.84 MHz	-70							
PCCPCH_RSCP	dB	-70	-70			-Infinity	-64		
Propagation Condition		AWGN							

A.8.2.1.1.2 1.28Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of an event when doing inter frequency measurements. The test will partly verify the requirements in section 8.1A.2 and 9.1.

The test consist of 2 successive time periods, with a time duration T1 and T2. The test parameters are given in tables A.8.2C and A.8.2D below. Two cells shall be present in the test, cell 1 being the active cell and cell 2 being a 1.28Mcps TDD option neighbour cell on the unused frequency.

In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used. P-CCPCH RSCP of the best cell on the unused frequency shall be reported together with Event 2C reporting. The measurement control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T1 is at least equal to the RRC procedure delay as defined in [16].

Table A.8.2C: General test parameters for correct reporting of TDD inter frequency neighbours in AWGN propagation condition

Parameter		Unit	Value	Comment
DPCH parameters active cell			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2. The DPCH is located in an other timeslot than 0
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	1.28Mcps TDD cell
	Neighbour cell		Cell 2	1.28Mcps TDD cell
Final condtions	Active cell		Cell 1	
Threshold non used frequency		dBm	-71	Absolute P-CCPCH RSCP threshold for event 2C
W non-used frequency			1	Applicable for event 2C
Hysteresis		dB	0	
Time to Trigger		ms	0	
Filter coefficient			0	
Monitored cell list size			24 on channel 1 16 on channel 2	
T1		s	10	
T2		s	10	

Table A.8.2D: Cell Specific Parameters for Correct Reporting of Neighbours in AWGN Propagation Condition

Parameter	Unit	Cell 1				Cell 2			
Timeslot Number		0		DwPTS		0		DwPTS	
		T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number (NOTE)		Channel 1				Channel 2			
PCCPCH_Ec/Ior	dB	-3				-3			
DwPCH_Ec/Ior	dB			0				0	
OCNS_Ec/Ior	dB	-3				-3			
$\hat{I}_{or}/I_{oc}$	dB	3	3			-Infinity	8		
I_{oc}	dBm/1.28 MHz	-70							
PCCPCH_RSCP	dBm	-70	-70			-Infinity	-65		
Propagation Condition		AWGN							

NOTE1: The DPCH of all cells are located in a timeslot other than 0.
NOTE2: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test.

A.8.2.1.1.3 7.68Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of an event when doing inter frequency measurements. The test will partly verify the requirements in section 8.1.2B and 9.1

The test consists of 2 successive time periods, with a time duration T1 and T2. The test parameters are given in tables A.8.2E and A.8.2F below. Two cells shall be present in the test, cell 1 being the serving cell and cell 2 being a UTRA

TDD neighbour cell on the unused frequency. All cells shall be synchronised, i.e. share the same frame and timeslot timing.

In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used. P-CCPCH RSCP of the best cell on the unused frequency shall be reported together with Event 2C reporting. The Measurement control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T1 is at least equal to the RRC procedure delay as defined in [16].

The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2. The DL DPCH shall be transmitted in timeslot 1 and the UL DPCH shall be transmitted in timeslot 3. The TTI of the uplink DCCH shall be 20 ms.

Table A.8.2E: General test parameters for correct reporting of TDD inter frequency neighbours in AWGN propagation condition

Parameter		Unit	Value	Comment
DPCH parameters			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 annex A.2.2
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	UTRA TDD cell
	Neighbour cell		Cell 2	UTRA TDD cell
Threshold non used frequency		dB	-71	Applicable for event 2C
Hysteresis		dB	0	Applicable for event 2C
Time to Trigger		ms	0	
Filter coefficient			0	
Monitored cell list size			24 on channel 1 16 on channel 2	
T1		s	10	
T2		s	10	

Table A.8.2F: Cell specific test parameters for correct reporting of TDD inter frequency neighbours in AWGN propagation condition

Parameter	Unit	Cell 1				Cell 2			
Timeslot Number		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number (Note 1)		Channel 1				Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	15	15	15	15
PICH_Ec/Ior				-3	-3			-3	-3
OCNS		-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28
$\hat{I}_{or}/I_{oc}$	dB	3	3	3	3	-Infinity	9	-Infinity	9
I_{oc}	dBm/7.68 MHz	-70							
PCCPCH_RSCP	dB	-70	-70			-Infinity	-64		
Propagation Condition		AWGN							

A.8.2.1.2 Test Requirements

A.8.2.1.2.1 3.84Mcps TDD option

The UE shall send one Event 2C triggered measurement report, with a measurement reporting delay less than 5 s from the beginning of time period T2.

The UE shall not send any measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.2.1.2.2 1.28Mcps TDD option

The UE shall send one Event 2C triggered measurement report, with a measurement reporting delay less than 5080ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of events correctly reported during repeated tests shall be at least 90%.

A.8.2.1.2.3 7.68Mcps TDD option

The UE shall send one Event 2C triggered measurement report, with a measurement reporting delay less than 5 s from the beginning of time period T2.

The UE shall not send any measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.3 FDD measurements

A.8.3.1 Correct reporting of FDD neighbours in AWGN propagation condition

A.8.3.1.1 Test Purpose and Environment

A.8.3.1.1.1 3.84 Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of events when measuring on UTRA FDD cells. This test will partly verify the requirements in section 8.1.2 and 9.1.

The test parameters are given in Table A.8.3A and A.8.3B below. The test consists of two successive time periods, with time durations of T1 and T2 respectively. Two cells shall be present in the test, cell 1 being the serving UTRA TDD cell and cell 2 being a UTRA FDD neighbour cells on the unused frequency.

In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used and that CPICH Ec/I0 of the best cell on the unused frequency shall be reported together with Event 2C. The Measurement control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T1 is at least equal to the RRC procedure delay as defined in [16].

The second Beacon timeslot shall be provided in timeslot 8 for cell 1. The DL DPCH shall be transmitted in timeslot 1 and the UL DPCH shall be transmitted in timeslot 3. The TTI of the uplink DCCH shall be 20 ms.

Table A.8.3A: General test parameters for correct reporting of FDD neighbours in AWGN

Parameter		Unit	Value	Comment
DPCH parameters			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	UTRA TDD cell
	Neighbour cell		Cell 2	UTRA FDD cell
Final conditions	Active cell		Cell 1	
Threshold non used frequency		dB	-18	Applicable for event 2C
W non-used frequency			1	Applicable for event 2C
Hysteresis		dB	0	Applicable for event 2C
Time to Trigger		ms	0	
Filter coefficient			0	
Monitored cell list size			6 TDD neighbours on channel 1 6 FDD neighbours on channel 2	
T1		s	15	
T2		s	10	

Table A.8.3B: Cell specific parameters for correct reporting of FDD neighbours in AWGN propagation condition

Parameter	Unit	Cell 1				Cell 2	
Timeslot Number		0		8		n.a	
		T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 2	
CPICH_Ec/Ior	dB	n.a.		n.a.		-10	
PCCPCH_Ec/Ior	dB	-3	-3			-12	
SCH_Ec/Ior	dB	-9	-9	-9	-9	-12	
SCH_t_{offset}		0	0	0	0	n.a.	
PICH_Ec/Ior				-3	-3	-15	
OCNS	dB	-4,28	-4,28	-4,28	-4,28	-0,941	
$\hat{I}_{or}/I_{oc}$	dB	3	3	3	3	-infinity	-1.8
I_{oc}	dBm/ 3.84 MHz	-70				-70	
CPICH_Ec/Io		n.a.				-infinity	-14
PCCPCH_RSCP	dB	-70	-70	-70	-70	n.a.	
Propagation Condition		AWGN				AWGN	

A.8.3.1.1.2 1.28 Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of an event when measuring on UTRA FDD cells. This test will partly verify the requirements in section 8.1A.2 and 9.1.

The test consists of two successive time periods, with a time duration T1 and T2. The test parameters are given in Table A.8.3C and A.8.3D. Two cells shall be present in the test, cell 1 being current active 1.28Mcps TDD cell and cell 2 being a UTRA FDD neighbouring cell.

In the measurement control information it is indicated to the UE hat event-triggered reporting with Event 2C shall be used and the CPICH RSCP of the best cell on the unused frequency shall be reported together with Event 2C.The measurement control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T1 is at least equal to the RRC procedure delay as defined in [16].

Table A.8.3C: General test parameters for Correct reporting of FDD neighbours in AWGN propagation condition

Parameter		Unit	Value	Comment
DPCH parameters active cell			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A. The DPCH is located in an other timeslot than 0.
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	1.28Mcps TDD cell
	Neighbour cell		Cell2	FDD cell
Final conditions	Active cell		Cell 1	1.28Mcps TDD cell
Threshold non used frequency		dBm	-86	Absolute CPICH RSCP threshold for event 2C
Hysteresis		dB	0	
W non-used frequency			1	Applicable for event 2C
Time to Trigger		ms	0	
Filter coefficient			0	
Monitored cell list size			6 TDD neighbours on Channel 1 6 FDD neighbours on Channel 2	
T1		s	10	
T2		s	10	

Table A.8.3D: Cell Specific parameters for Correct reporting of FDD neighbours in AWGN propagation condition:

Parameter	Unit	Cell 1				Cell 2	
Timeslot Number		0		DwPTS		n.a	n.a.
		T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1 (Note 1)				Channel 2	
CPICH_Ec/Ior	dB	n.a.		n.a.		-10	-10
PCCPCH_Ec/Ior	dB	-3	-3			-12	-12
SCH_Ec/Ior	dB					-12	-12
PICH_Ec/Ior	dB					-15	-15
DwPCH_Ec/Ior	dB			0	0	n.a.	n.a.
OCNS	dB	-3	-3			-0,941	-0,941
$\hat{I}_{or}/I_{oc}$	dB	3	3	3	3	-Infinity	-2
I_{oc}	dBm/1.28 MHz	-70					
I_{oc}	dBm/3.84 MHz					-70	
CPICH_RSCP	dBm	n.a.				-Infinity	-82
PCCPCH_RSCP	dBm	-70	-70			n.a.	n.a.
Propagation Condition		AWGN				AWGN	
NOTE 1: The DPCH of cell 1 is located in a timeslot other than 0. NOTE 2: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test.							

A.8.3.1.1.3 7.68 Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of events when measuring on UTRA FDD cells. This test will partly verify the requirements in section 8.1.2B and 9.1.

The test parameters are given in Table A.8.3E and A.8.3F below. The test consists of two successive time periods, with time durations of T1 and T2 respectively. Two cells shall be present in the test, cell 1 being the serving UTRA TDD cell and cell 2 being a UTRA FDD neighbour cells on the unused frequency.

In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used and that CPICH Ec/I0 of the best cell on the unused frequency shall be reported together with Event 2C. The

Measurement control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T1 is at least equal to the RRC procedure delay as defined in [16].

The second Beacon timeslot shall be provided in timeslot 8 for cell 1. The DL DPCH shall be transmitted in timeslot 1 and the UL DPCH shall be transmitted in timeslot 3. The TTI of the uplink DCCH shall be 20 ms.

Table A.8.3E: General test parameters for correct reporting of FDD neighbours in AWGN

Parameter		Unit	Value	Comment
DPCH parameters			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	UTRA TDD cell
	Neighbour cell		Cell 2	UTRA FDD cell
Final conditions	Active cell		Cell 1	
Threshold non used frequency		dB	-18	Applicable for event 2C
W non-used frequency			1	Applicable for event 2C
Hysteresis		dB	0	Applicable for event 2C
Time to Trigger		ms	0	
Filter coefficient			0	
Monitored cell list size			6 TDD neighbours on channel 1 6 FDD neighbours on channel 2	
T1		s	15	
T2		s	10	

Table A.8.3F: Cell specific parameters for correct reporting of FDD neighbours in AWGN propagation condition

Parameter	Unit	Cell 1				Cell 2	
Timeslot Number		0		8		n.a	
		T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 2	
CPICH_Ec/Ior	dB	n.a.		n.a.		-10	
PCCPCH_Ec/Ior	dB	-3	-3			-12	
SCH_Ec/Ior	dB	-9	-9	-9	-9	-12	
SCH_t_{offset}		0	0	0	0	n.a.	
PICH_Ec/Ior				-3	-3	-15	
OCNS	dB	-4,28	-4,28	-4,28	-4,28	-0,941	
$\hat{I}_{or}/I_{oc}$	dB	3	3	3	3	-infinity	-1.8
I_{oc}	dBm/ 7.68 MHz	-70				-70	
CPICH_Ec/Io		n.a.				-infinity	-14
PCCPCH_RSCP	dB	-70	-70	-70	-70	n.a.	
Propagation Condition		AWGN				AWGN	

A.8.3.1.2 Test Requirements

A.8.3.1.2.1 3.84 Mcps TDD option

The UE shall send one Event 2C triggered measurement report, with a measurement reporting delay less than 5 seconds from the start of time period T2.

The UE shall not send any measurement reports, as long as the reporting criteria are not fulfilled.

The rate of events correctly observed during repeated tests shall be at least 90%.

A.8.3.1.2.2 1.28 Mcps TDD option

The UE shall send one Event 2C triggered measurement report, with a measurement reporting delay less than 5 s from the beginning of time period T2.

The UE shall not send any measurement reports, as long as the reporting criteria are not fulfilled.

The rate of events correctly reported during repeated tests shall be at least 90%.

A.8.3.1.2.3 7.68 Mcps TDD option

The UE shall send one Event 2C triggered measurement report, with a measurement reporting delay less than 5 seconds from the start of time period T2.

The UE shall not send any measurement reports, as long as the reporting criteria are not fulfilled.

The rate of events correctly observed during repeated tests shall be at least 90%.

A.8.4 GSM measurements

A.8.4.1 Correct reporting of GSM neighbours in AWGN propagation condition

A.8.4.1.1 Test Purpose and Environment

A.8.4.1.1.1 3.84 Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of an event when doing GSM measurements. This test will partly verify the requirements in section 8.1.2.5. The requirements are also applicable for a UE not requiring idle intervals to perform GSM measurements.

The test parameters are given in Tables A.8.4.1, A.8.4.2 and A.8.4.3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 3B and 3C shall be used. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

Cell 1 is a UTRA TDD cell and cell 2 is a GSM cell. The Beacon timeslot shall be transmitted in timeslot 0 for cell 1 and no second Beacon timeslot shall be provided for cell 1. The DL DPCH shall be transmitted in timeslot 1 and the UL DPCH shall be transmitted in timeslot 3.

Table A.8.4.1: General test parameters for correct reporting of GSM neighbours in AWGN propagation condition

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2
Power Control		On	
Target quality value on DTCH	BLER	0.01	
Active cell		Cell 1	
Inter-RAT measurement quantity		GSM carrier RSSI	
BSIC verification required		Required	
Threshold other system	dBm	-80	Absolute GSM carrier RSSI threshold for Events 3B and 3C.
Hysteresis	dB	0	
Time to Trigger	ms	0	
Filter coefficient		0	
Monitored cell list size		12 TDD neighbours on Channel 1 6 GSM neighbours including ARFCN 1	Measurement control information is sent before the start of time period T1.
$T_{identify\ abort}$	s	5	As specified in section 8.1.2.5
$T_{reconfirm\ abort}$	s	5	As specified in section 8.1.2.5
T1	s	10	
T2	s	10	
T3	s	10	

Table A.8.4.2: Cell specific parameters for correct reporting of GSM neighbours in AWGN propagation condition (cell 1)

Parameter	Unit	Cell 1	
		T1, T2, T3	
DL timeslot number		0	1
UTRA RF Channel number		Channel 1	
PCCPCH_Ec/Ior	dB	-3	n.a.
SCH_Ec/Ior	dB	-9	n.a.
SCH_t_{offset}		0	n.a.
OCNS_Ec/Ior	dB	-3,12	Note 2
DPCH_Ec/Ior	dB	n.a.	Note 1
Îor/Ioc	dB	6	6
Io, Note 1	dBm / 3.84 MHz	-70	
Propagation condition		AWGN	
Note 1: The DPCH level is controlled by the power control loop Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Ior.			

Table A.8.4.3: Cell specific parameters for correct reporting of GSM neighbours in AWGN propagation condition (cell 2)

Parameter	Unit	Cell 2		
		T1	T2	T3
Absolute RF Channel Number		ARFCN 1		
RXLEV	dBm	-85	-75	-85

A.8.4.1.1.2 1.28 Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of an event when doing inter-RAT GSM measurements. This test will partly verify the requirements in section 8.1A.2.5. The requirements are also applicable for a UE not requiring idle intervals to perform GSM measurements.

Two cells shall be present in the test, Cell 1 is current active cell, cell 2 is a GSM cell. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 3B and 3C shall be used. At the start of time duration T1, the UE may not have any timing information of cell 2.

A.8.4.1.1.2.1 Test 1. With BSIC verification required

The test parameters are given in Tables A.8.4.4, A.8.4.5 and A.8.4.6.

Table A.8.4.4: General test parameters for Correct reporting of GSM neighbours in AWGN propagation condition, Test 1.

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2. The DPCH is located in an other timeslot than 0.
Power Control		On	
Target quality value on DTCH	BLER	0.01	
Active cell		Cell 1	
Inter-RAT measurement quantity		GSM Carrier RSSI	
BSIC verification required		required	
Threshold other system	dBm	-80	Absolute GSM carrier RSSI threshold for event 3B and 3C.
Hysteresis	dB	0	
Time to Trigger	ms	0	
Filter coefficient		0	
Monitored cell list size		12 TDD neighbours on Channel 1 6 GSM neighbours including ARFCN 1	Measurement control information is sent before T1 starts.
T Identify abort	s	5.0	
T Reconfirm abort	s	5.0	
T1	s	5	
T2	s	7	
T3	s	5	

Table A.8.4.5: Cell specific test parameters for Correct reporting of GSM neighbours in AWGN propagation condition (cell 1)

Parameter	Unit	Cell 1	
		T1, T2, T3	
Timeslot Number		0	DwPTS
UTRA RF Channel Number (NOTE 3)		Channel 1	
PCCPCH_Ec/Ior	dB	-3	
DwPCH_Ec/Ior	dB		0
OCNS_Ec/Ior		-3	
$\hat{I}_{or}/I_{oc}$	dB	3	
I_{oc}	dBm/1.28 MHz	-70	
PCCPCH_RSCP	dB	-70	
Propagation Condition		AWGN	

NOTE 1: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Ior.
NOTE 2: PCCPCH RSCP levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.
NOTE 3: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test.

Table A.8.4.6: Cell specific test parameters for Correct reporting of GSM neighbours in AWGN propagation condition (cell 2)

Parameter	Unit	Cell 2		
		T1	T2	T3
Absolute RF Channel Number		ARFCN 1		
RXLEV	dBm	-infinity	-75	-85

A.8.4.1.1.2.2 Test 2. Without BSIC verification required

The test parameters are given in Tables A.8.4.7, A.8.4.8 and A.8.4.9.

Table A.8.4.7: General test parameters for Correct reporting of GSM neighbours in AWGN propagation condition, Test 2

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2. The DPCH is located in an other timeslot than 0.
Power Control		On	
Target quality value on DTCH	BLER	0.01	
Active cell		Cell 1	
Inter-RAT measurement quantity		GSM Carrier RSSI	
BSIC verification required		Not required	
Threshold other system	dBm	-80	Absolute GSM carrier RSSI threshold for event 3B and 3C.
Hysteresis	dB	0	
Time to Trigger	ms	0	
Filter coefficient		0	
Monitored cell list size		12 TDD neighbours on Channel 1 6 GSM neighbours including ARFCN 1	Measurement control information is sent before T1 starts.
T1	s	5	
T2	s	2	
T3	s	5	

Table A.8.4.8: Cell specific test parameters for Correct reporting of GSM neighbours in AWGN propagation condition (cell 1)

Parameter	Unit	Cell 1	
		T1, T2, T3	
Timeslot Number		0	DwPTS
UTRA RF Channel Number (NOTE 3)		Channel 1	
PCCPCH_Ec/Ior	dB	-3	
DwPCH_Ec/Ior	dB		0
OCNS_Ec/Ior		-3	
$\hat{I}_{or}/I_{oc}$	dB	3	
I_{oc}	dBm/1.28 MHz	-70	
PCCPCH_RSCP	dB	-70	
Propagation Condition		AWGN	
NOTE 1: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Ior. NOTE 2: PCCPCH RSCP levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. NOTE 3: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test.			

Table A.8.4.9: Cell specific test parameters for Correct reporting of GSM neighbours in AWGN propagation condition (cell 2)

Parameter	Unit	Cell 2		
		T1	T2	T3
Absolute RF Channel Number		ARFCN 1		
RXLEV	dBm	-infinity	-75	-85

A.8.4.1.1.3 7.68 Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of an event when doing GSM measurements. This test will partly verify the requirements in section 8.1.2B.5. The requirements are also applicable for a UE not requiring idle intervals to perform GSM measurements.

The test parameters are given in Tables A.8.4.7, A.8.4.8 and A.8.4.9 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 3B and 3C shall be used. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

Cell 1 is a UTRA TDD cell and cell 2 is a GSM cell. The Beacon timeslot shall be transmitted in timeslot 0 for cell 1 and no second Beacon timeslot shall be provided for cell 1. The DL DPCH shall be transmitted in timeslot 1 and the UL DPCH shall be transmitted in timeslot 3.

Table A.8.4.7: General test parameters for correct reporting of GSM neighbours in AWGN propagation condition

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2
Power Control		On	
Target quality value on DTCH	BLER	0.01	
Active cell		Cell 1	
Inter-RAT measurement quantity		GSM carrier RSSI	
BSIC verification required		Required	
Threshold other system	dBm	-80	Absolute GSM carrier RSSI threshold for Events 3B and 3C.
Hysteresis	dB	0	
Time to Trigger	ms	0	
Filter coefficient		0	
Monitored cell list size		12 TDD neighbours on Channel 1 6 GSM neighbours including ARFCN 1	Measurement control information is sent before the start of time period T1.
$T_{identify\ abort}$	s	5	As specified in section 8.1.2B.5
$T_{reconfirm\ abort}$	s	5	As specified in section 8.1.2B.5
T1	s	10	
T2	s	10	
T3	s	10	

Table A.8.4.8: Cell specific parameters for correct reporting of GSM neighbours in AWGN propagation condition (cell 1)

Parameter	Unit	Cell 1	
		T1, T2, T3	
DL timeslot number		0	1
UTRA RF Channel number		Channel 1	
PCCPCH_Ec/Ior	dB	-3	n.a.
SCH_Ec/Ior	dB	-9	n.a.
SCH_t_{offset}		0	n.a.
OCNS_Ec/Ior	dB	-3,12	Note 2
DPCH_Ec/Ior	dB	n.a.	Note 1
Îor/Ioc	dB	6	6
Io, Note 1	dBm / 7.68 MHz	-70	
Propagation condition		AWGN	
Note 1: The DPCH level is controlled by the power control loop Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Ior.			

Table A.8.4.9: Cell specific parameters for correct reporting of GSM neighbours in AWGN propagation condition (cell 2)

Parameter	Unit	Cell 2		
		T1	T2	T3
Absolute RF Channel Number		ARFCN 1		
RXLEV	dBm	-85	-75	-85

A.8.4.1.2 Test Requirements

A.8.4.1.2.1 3.84 Mcps TDD option

The UE shall send one Event 3C triggered measurement report for cell 2, with a measurement reporting delay less than 960 ms from the start of time period T2.

The UE shall send one Event 3B triggered measurement report for cell 2, with a measurement reporting delay less than 960 ms from the start of time period T3.

The UE shall not send any Event 3B or 3C triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.4.1.2.2 1.28 Mcps TDD option

A.8.4.1.2.2.1 Test Requirement with BSIC verification required

The UE shall send one Event 3C triggered measurement report for cell 2, with a measurement reporting delay less than 5.96s from the beginning of time period T2.

The UE shall send one Event 3B triggered measurement report for cell 2, with a measurement reporting delay less than 960 ms from the beginning of time period T3.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of events correctly observed during repeated tests shall be at least 90%.

A.8.4.1.2.2.1 Test Requirement without BSIC verification required

The UE shall send one Event 3C triggered measurement report for cell 2, with a measurement reporting delay less than 960ms from the beginning of time period T2.

The UE shall send one Event 3B triggered measurement report for cell 2, with a measurement reporting delay less than 960 ms from the beginning of time period T3.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of events correctly observed during repeated tests shall be at least 90%.

A.8.4.1.2.3 7.68 Mcps TDD option

The UE shall send one Event 3C triggered measurement report for cell 2, with a measurement reporting delay less than 960 ms from the start of time period T2.

The UE shall send one Event 3B triggered measurement report for cell 2, with a measurement reporting delay less than 960 ms from the start of time period T3.

The UE shall not send any Event 3B or 3C triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

A.9 Measurement Performance Requirements

Unless explicitly stated:

- Measurement channel is 12.2 kbps as defined in TS 25.102 annex A. This measurement channel is used both in active cell and cells to be measured.
- Cell 1 is the active cell.

- Single task reporting.
- Power control is active.

A.9.1 Measurement Performance for UE (3.84 Mcps TDD option)

A.9.1.1 P-CCPCH RSCP

A.9.1.1.1 Test Purpose and Environment

The purpose of this test is to verify that the P-CCPCH RSCP measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.1.

Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing. The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12.

A.9.1.1.1.1 Intra frequency test parameters

In this case all cells are on the same frequency. The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2.

Both P-CCPCH RSCP intra frequency absolute and relative accuracy requirements are tested by using test parameters in Table A.9.1.

Table A.9.1: P-CCPCH RSCP Intra frequency test parameters

Parameter	Unit	Test 1		Test 2		Test 3	
		Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
DL timeslot number		0	0	0	0	0	0
UTRA RF Channel number		Channel 1		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3		-3		-3	
SCH_Ec/Ior	dB	-9		-9		-9	
SCH_t_{offset}		0	5	0	5	0	5
OCNS_Ec/Ior	dB	-3,12		-3,12		-3,12	
Ioc	dBm / 3.84 MHz	-75.7		-59.8		-98.7	
Îor/Ioc	dB	5	2	9	2	3	0
PCCPCH RSCP, Note 1	dBm	-73.7	-76.7	-53.8	-60.8	-98.7	-101.7
Io, Note 1	dBm / 3.84 MHz	-69		-50		-94	
Propagation condition		AWGN		AWGN		AWGN	
NOTE 1: PCCPCH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.							

A.9.1.1.1.2 Inter frequency test parameters

In this case both cells are on different frequencies. The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2.

P-CCPCH RSCP inter frequency relative accuracy requirements are tested by using test parameters in Table A.9.2.

Table A.9.2: P-CCPCH RSCP Inter frequency tests parameters

Parameter	Unit	Test 1		Test 2		Test 3	
		Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
DL timeslot number		0	2	0	2	0	2
UTRA RF Channel number		Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
PCCPCH_Ec/Ior	dB	-3		-3		-3	
SCH_Ec/Ior	dB	-9		-9		-9	
SCH_t_{offset}		0	5	0	5	0	5
OCNS_Ec/Ior	dB	-3,12		-3,12		-3,12	
Ioc	dBm / 3.84 MHz	-75.2	-75.2	-57.8	-54.1	-98.7	-97
$\hat{I}$or/Ioc	dB	5	5	7	2	3	0
PCCPCH RSCP, Note 1	dBm	-73.2	-73.2	-54.8	-55.1	-98.7	-100
Io, Note 1	dBm / 3.84 MHz	-69		-50		-94	
Propagation condition		AWGN		AWGN		AWGN	
NOTE 1: PCCPCH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.							

A.9.1.1.2 Test Requirements

The P-CCPCH RSCP measurement accuracy shall meet the requirements in section 9.1.1.1.

The rate of correct measurements observed during repeated tests shall be at least 90%.

A.9.1.2 CPICH measurements

A.9.1.2.1 CPICH RSCP

A.9.1.2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the CPICH RSCP measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.2 and applies to UE"s supporting this capability.

The DL DPCH shall be transmitted in timeslot 1 and the UL DPCH shall be transmitted in timeslot 3.

A.9.1.2.1.1.1 Inter frequency test parameters

In this case both cells are on different frequencies. Cell 1 is a UTRA TDD cell and cell 2 is a UTRA FDD cell. No second Beacon timeslot shall be provided for cell 1.

CPICH RSCP inter frequency absolute accuracy requirements are tested by using test parameters in Table A.9.3.

Table A.9.3: CPICH RSCP Inter frequency tests parameters

Parameter	Unit	Test 1		Test 2	
		Cell 1	Cell 2	Cell 1	Cell 2
DL timeslot number		0	n.a.	0	n.a.
UTRA RF Channel number		Channel 1	Channel 2	Channel 1	Channel 2
CPICH_Ec/Ior	dB	n.a.	-10	n.a.	-10
PCCPCH_Ec/Ior	dB	-3	-12	-3	-12
SCH_Ec/Ior	dB	-9	-12	-9	-12
SCH_t_{offset}		5	n.a.	5	n.a.
PICH_Ec/Ior	dB	n.a.	-15	n.a.	-15
OCNS_Ec/Ior	dB	-3.12	-0.94	-3.12	-0.94
Ioc	dBm/ 3.84 MHz	-57.7	-60	-84.7	-84
Îor/Ioc	dB	7	9.54	3	0
PCCPCH RSCP, Note 1	dBm	-53.7	n.a.	-84.7	n.a.
CPICH RSCP, Note 1	dBm	n.a.	-60.46	n.a.	-94
Io, Note 1	dBm/ 3.84 MHz	-50	-50	-80	-81
Propagation condition	-	AWGN		AWGN	
NOTE 1: PCCPCH RSCP, CPICH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.					

A.9.1.2.1.2 Test Requirements

The CPICH RSCP measurement accuracy shall meet the requirements in section 9.1.1.2.

The rate of correct measurements observed during repeated tests shall be at least 90%.

A.9.1.2.2 CPICH Ec/Io

NOTE: This section is included for consistency with numbering in section 9, currently no test covering requirements in sections 9.1.1.3 exists.

A.9.1.3 Timeslot ISCP

A.9.1.3.1 Test Purpose and Environment

The purpose of this test is to verify that the Timeslot ISCP measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.3.

Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing. The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12.

A.9.1.3.1.1 Intra frequency test parameters

In this case all cells are on the same frequency. The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2.

The Timeslot ISCP intra frequency absolute accuracy requirements are tested by using test parameters in Table A.9.4.

Table A.9.4: Timeslot ISCP Intra frequency test parameters

Parameter	Unit	Test 1		Test 2		Test 3	
		Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
DL timeslot number		0	0	0	0	0	0
UTRA RF Channel number		Channel 1		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3		-3		-3	
SCH_Ec/Ior	dB	-9		-9		-9	
SCH_t_{offset}		0	5	0	5	0	5
OCNS_Ec/Ior	dB	-3,12		-3,12		-3,12	
Ioc	dBm / 3.84 MHz	-75.7		-59.8		-98.7	
Îor/Ioc	dB	5	2	9	2	3	0
Timeslot ISCP, Note 1	dBm	-73.7	-70.7	-57.8	-50.8	-98.7	-95.7
Io, Note 1	dBm / 3.84 MHz	-69		-50		-94	
Propagation condition		AWGN		AWGN		AWGN	
NOTE 1: Timeslot ISCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.							

A.9.1.3.2 Test Requirements

The Timeslot ISCP measurement accuracy shall meet the requirements in section 9.1.1.3.

The rate of correct measurements observed during repeated tests shall be at least 90%.

A.9.1.4 UTRA Carrier RSSI

A.9.1.4.1 Test Purpose and Environment

The purpose of this test is to verify that the UTRA Carrier RSSI measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.4.

Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing. The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12.

A.9.1.4.1.1 Inter frequency test parameters

In this case both cells are on different frequencies. The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2.

Both UTRA Carrier RSSI absolute and relative accuracy requirements are tested by using test parameters in Table A.9.5.

Table A.9.5: UTRA Carrier RSSI Inter frequency tests parameters

Parameter	Unit	Test 1		Test 2		Test 3	
		Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
DL timeslot number		0	2	0	2	0	2
UTRA RF Channel number		Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
PCCPCH_Ec/Ior	dB	-3		-3		-3	
SCH_Ec/Ior	dB	-9		-9		-9	
SCH_t_{offset}		0	5	0	5	0	5
OCNS_Ec/Ior	dB	-3,12		-3,12		-3,12	
Ioc	dBm / 3.84 MHz	-75.2	-75.2	-57.8	-54.1	-98.7	-97
$\hat{I}$or/Ioc	dB	5	5	7	2	3	0
Io, Note 1	dBm / 3.84 MHz	-69		-50		-94	
Propagation condition		AWGN		AWGN		AWGN	
NOTE 1: Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.							

A.9.1.4.2 Test Requirements

The UTRA Carrier RSSI absolute measurement accuracy shall meet the requirements in section 9.1.1.4.

The UTRA Carrier RSSI relative measurement accuracy shall meet the requirements in Table A.9.6 by taking into account the effect of thermal noise and noise added by the receiver.

Table A.9.6: UTRA Carrier RSSI relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm/3.84 MHz]
UTRA Carrier RSSI	dBm	-4…5.2	-7…8.2	-94…-87
	dBm	± 4	± 7	-87...-70
	dBm	± 6	± 9	-70...-50

The rate of correct measurements observed during repeated tests shall be at least 90%.

A.9.1.5 GSM carrier RSSI

A.9.1.5.1 Test Purpose and Environment

The purpose of this test is to verify that the GSM Carrier RSSI measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.5.

Cell 1 is a UTRA TDD cell and cell 2 is a GSM cell. The Beacon timeslot shall be provided in timeslot 0 and no second Beacon timeslot shall be provided for cell 1. In the measurement control information it is indicated to the UE that periodic reporting of the GSM carrier RSSI measurement is used. The DL DPCH shall be transmitted in timeslot 1 and the UL DPCH shall be transmitted in timeslot 3.

A.9.1.5.1.1 Inter frequency test parameters

GSM carrier RSSI accuracy requirements are tested by using test parameters in Table A.9.6A and A.9.6B.

The limits of the GSM test parameters are defined in [21].

Table A.9.6A: General GSM Carrier RSSI test parameters

Parameter	Unit	Value	Comment
DCH parameters		DL reference measurement channel 12.2 kbps	As specified in TS 25.102 section A.2.2
Power Control		On	
Target quality value on DTCH	BLER	0.01	
Inter-RAT measurement quantity		GSM carrier RSSI	
BSIC verification required		No	
Monitored cell list size		6 GSM neighbours including ARFCN 1	

Table A.9.6B: Cell 1 specific GSM Carrier RSSI test parameters

Parameter	Unit	Cell 1	
DL timeslot number		0	1
UTRA RF Channel number		Channel 1	
PCCPCH_Ec/Ior	dB	-3	n.a.
SCH_Ec/Ior	dB	-9	n.a.
SCH_t_{offset}		0	n.a.
OCNS_Ec/Ior	dB	-3,12	Note 2
DPCH_Ec/Ior	dB	n.a.	Note 1
Îor/Ioc	dB	6	6
Io, Note 1	dBm / 3.84 MHz	-70	
Propagation condition		AWGN	
Note 1: The DPCH level is controlled by the power control loop Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Ior.			

A.9.1.5.2 Test Requirements

The GSM Carrier RSSI measurement accuracy shall meet the requirements in section 9.1.5.

The rate of correct measurements observed during repeated tests shall be at least 90%.

A.9.1.6 SIR

NOTE: This section is included for consistency with numbering in section 9, currently no test covering requirements in sections 9.1.1.6 exists.

A.9.1.7 Transport channel BLER

NOTE: This section is included for consistency with numbering in section 9, currently no test covering requirements in sections 9.1.1.7 exists.

A.9.1.8 SFN-SFN observed time difference

A.9.1.8.1 SFN-SFN observed time difference type 1

A.9.1.8.1.1 Test Purpose and Environment

The purpose of this test is to verify that the SFN-SFN observed time difference type 1 measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.8.

Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing. During the test, the timing difference between cell 1 and cell 2 can be set to any value from 0…9830400 chip.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12. The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2.

A.9.1.8.1.1.1 Intra frequency test parameters

In this case all cells are on the same frequency. The SFN-SFN observed time difference type 1 accuracy requirements in the intra-frequency case are tested by using test parameters in Table A.9.7.

Table A.9.7: SFN-SFN observed time difference type 1 Intra frequency test parameters

Parameter	Unit	Test 1		Test 2		Test 3	
		Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
DL timeslot number		0	2	0	2	0	2
UTRA RF Channel number		Channel 1		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3		-3		-3	
SCH_Ec/Ior	dB	-9		-9		-9	
SCH_t_{offset}		0	5	0	5	0	5
OCNS_Ec/Ior	dB	-3,12		-3,12		-3,12	
Ioc	dBm / 3.84 MHz	-75.2	-75.2	-57.8	-54.7	-98.7	-98.7
$\hat{I}$or/Ioc	dB	5	5	7	3	3	3
Io, Note 1	dBm / 3.84 MHz	-69		-50		-94	
Propagation condition		AWGN		AWGN		AWGN	
NOTE 1: Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.							

A.9.1.8.1.1.2 Inter frequency test parameters

In this case both cells are on different frequencies. The SFN-SFN observed time difference type 2 accuracy requirements in the inter-frequency case are tested by using test parameters in Table A.9.8.

Table A.9.8: SFN-SFN observed time difference type 1 Inter frequency tests parameters

Parameter	Unit	Test 1		Test 2		Test 3	
		Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
DL timeslot number		0	2	0	2	0	2
UTRA RF Channel number		Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
PCCPCH_Ec/Ior	dB	-3		-3		-3	
SCH_Ec/Ior	dB	-9		-9		-9	
SCH_t_{offset}		0	5	0	5	0	5
OCNS_Ec/Ior	dB	-3,12		-3,12		-3,12	
Ioc	dBm / 3.84 MHz	-75.2	-75.2	-57.8	-54.7	-98.7	-98.7
$\hat{I}$or/Ioc	dB	5	5	7	3	3	3
Io, Note 1	dBm / 3.84 MHz	-69		-50		-94	
Propagation condition		AWGN		AWGN		AWGN	
NOTE 1: Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.							

A.9.1.8.1.2 Test Requirements

The SFN-SFN observed time difference type 1 measurement accuracy shall meet the requirements in section 9.1.1.8.

The rate of correct measurements observed during repeated tests shall be at least 90%.

A.9.1.8.2 SFN-SFN observed time difference type 2

A.9.1.8.2.1 Test Purpose and Environment

The purpose of this test is to verify that the SFN-SFN observed time difference type 2 measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.8.

Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing. During the test, the timing difference between cell 1 and cell 2 can be set to any value from -1280 ... +1280 chip.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12. The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2.

A.9.1.8.2.1.1 Intra frequency test parameters

In this case all cells are on the same frequency. The SFN-SFN observed time difference type 2 accuracy requirements in the intra-frequency case are tested by using test parameters in Table A.9.8A.

Table A.9.8A: SFN-SFN observed time difference type 2 Intra frequency test parameters

Parameter	Unit	Test 1		Test 2		Test 3	
		Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
DL timeslot number		0	2	0	2	0	2
UTRA RF Channel number		Channel 1		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3		-3		-3	
SCH_Ec/Ior	dB	-9		-9		-9	
SCH_t_{offset}		0	5	0	5	0	5
OCNS_Ec/Ior	dB	-3,12		-3,12		-3,12	
Ioc	dBm / 3.84 MHz	-75.2	-75.2	-57.8	-54.7	-98.7	-98.7
Îor/Ioc	dB	5	5	7	3	3	3
Io, Note 1	dBm / 3.84 MHz	-69		-50		-94	
Propagation condition		AWGN		AWGN		AWGN	
NOTE 1: Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.							

A.9.1.8.2.1.2 Inter frequency test parameters

In this case both cells are on different frequencies. The SFN-SFN observed time difference type 2 accuracy requirements in the inter-frequency case are tested by using test parameters in Table A.9.8B.

Table A.9.8B: SFN-SFN observed time difference type 2 Inter frequency tests parameters

Parameter	Unit	Test 1		Test 2		Test 3	
		Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
DL timeslot number		0	2	0	2	0	2
UTRA RF Channel number		Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
PCCPCH_Ec/Ior	dB	-3		-3		-3	
SCH_Ec/Ior	dB	-9		-9		-9	
SCH_t_{offset}		0	5	0	5	0	5
OCNS_Ec/Ior	dB	-3,12		-3,12		-3,12	
Ioc	dBm / 3.84 MHz	-75.2	-75.2	-57.8	-54.7	-98.7	-98.7
$\hat{I}$or/Ioc	dB	5	5	7	3	3	3
Io, Note 1	dBm / 3.84 MHz	-69		-50		-94	
Propagation condition		AWGN		AWGN		AWGN	
NOTE 1: Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.							

A.9.1.8.2.2 Test Requirements

The SFN-SFN observed time difference type 2 measurement accuracy shall meet the requirements in section 9.1.1.8.

The rate of correct measurements observed during repeated tests shall be at least 90%.

A.9.1.9 Observed time difference to GSM cell

NOTE: This section is included for consistency with numbering in section 9, currently no test covering requirements in sections 9.1.1.9 exists.

A.9.1.10 SFN-CFN observed time difference

A.9.1.10.1 Test Purpose and Environment

The purpose of this test is to verify that the SFN-CFN observed time difference measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.10.

Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing. During the test, the timing difference between cell 1 and cell 2 can be set to any value from 0…256 frames.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12. The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2.

A.9.1.10.1.1 Intra frequency test parameters

In this case all cells are on the same frequency. The SFN-CFN observed time difference accuracy requirements in the intra-frequency case are tested by using test parameters in Table A.9.9.

Table A.9.9: SFN-CFN observed time difference Intra frequency test parameters

Parameter	Unit	Test 1		Test 2		Test 3	
		Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
DL timeslot number		0	2	0	2	0	2
UTRA RF Channel number		Channel 1		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3		-3		-3	
SCH_Ec/Ior	dB	-9		-9		-9	
SCH_t_{offset}		0	5	0	5	0	5
OCNS_Ec/Ior	dB	-3,12		-3,12		-3,12	
Ioc	dBm / 3.84 MHz	-75.2	-75.2	-57.8	-54.7	-98.7	-98.7
Îor/Ioc	dB	5	5	7	3	3	3
Io, Note 1	dBm / 3.84 MHz	-69		-50		-94	
Propagation condition		AWGN		AWGN		AWGN	
NOTE 1: Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.							

A.9.1.10.1.2 Inter frequency test parameters

In this case both cells are on different frequencies. The SFN-CFN observed time difference accuracy requirements in the inter-frequency case are tested by using test parameters in Table A.9.10.

Table A.9.10: SFN-CFN observed time difference Inter frequency tests parameters

Parameter	Unit	Test 1		Test 2		Test 3	
		Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
DL timeslot number		0	2	0	2	0	2
UTRA RF Channel number		Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
PCCPCH_Ec/Ior	dB	-3		-3		-3	
SCH_Ec/Ior	dB	-9		-9		-9	
SCH_t_{offset}		0	5	0	5	0	5
OCNS_Ec/Ior	dB	-3,12		-3,12		-3,12	
Ioc	dBm / 3.84 MHz	-75.2	-75.2	-57.8	-54.7	-98.7	-98.7
Îor/Ioc	dB	5	5	7	3	3	3
Io, Note 1	dBm / 3.84 MHz	-69		-50		-94	
Propagation condition		AWGN		AWGN		AWGN	
NOTE 1: Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.							

A.9.1.10.2 Test Requirements

The SFN-CFN observed time difference measurement accuracy shall meet the requirements in section 9.1.1.10.

The rate of correct measurements observed during repeated tests shall be at least 90%.

A.9.1.11 UE transmitted power

NOTE: This section is included for consistency with numbering in section 9, currently no test covering requirements in sections 9.1.1.11 exists.

A.9.2 Measurement Performance for UE for 1.28 Mcps TDD

A.9.2.1 P-CCPCH RSCP

A.9.2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the P-CCPCH RSCP measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.1.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 2.

A.9.2.1.1.1 Intra frequency test parameters

Both P-CCPCH RSCP intra frequency absolute and relative accuracy requirements are tested by using test parameters in Table A.9.11.

Table A.9.11: P-CCPCH RSCP Intra frequency test parameters

	Test 1				
Parameter	**Unit**	**Cell 1**		**Cell 2**	
Timeslot Number		0	DwPTS	0	DwPTS
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3		-3	
DwPCH_Ec/Ior	dB		0		0
OCNS_Ec/Ior	dB	-3		-3	
$\hat{I}_{or}/I_{oc}$	dB	5		2	
I_{oc}	dBm/ 1.28 MHz	-76.6			
PCCPCH RSCP, Note 1	dBm	-74.6		-77.6	
Io, Note 1	dBm/ 1.28 MHz	-69			
Propagation condition		AWGN			
	Test 2				
Parameter	**Unit**	**Cell 1**		**Cell 2**	
Timeslot Number		0	DwPTS	0	DwPTS
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3		-3	
DwPCH_Ec/Ior	dB		0		0
OCNS_Ec/Ior	dB	-3		-3	
$\hat{I}_{or}/I_{oc}$	dB	9		2	
I_{oc}	dBm/ 1.28 MHz	-60.2			
PCCPCH RSCP, Note 1	dBm	-54.2		-61.2	
Io, Note 1	dBm/ 1.28 MHz	-50			
Propagation condition		AWGN			
	Test 3				
Parameter	**Unit**	**Cell 1**		**Cell 2**	
Timeslot Number		0	DwPTS	0	DwPTS
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3		-3	
DwPCH_Ec/Ior	dB		0		0
OCNS_Ec/Ior	dB	-3		-3	
$\hat{I}_{or}/I_{oc}$	dB	5		3	
I_{oc}	dBm/ 1.28 MHz	-101.9			
PCCPCH RSCP, Note 1	dBm	-99.9		-101.9	
Io, Note 1	dBm/ 1.28 MHz	-94			
Propagation condition		AWGN			

NOTE 1: PCCPCH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.
NOTE2: In the case of multi-frequecny network,the UTRA RF Channel Number can be set for the primary frequency in this test.

A.9.2.1.1.2 Inter frequency test parameters

P-CCPCH RSCP inter frequency relative accuracy requirements are tested by using test parameters in Table A.9.12.

Table A.9.12: P-CCPCH RSCP Inter frequency tests parameters

	Test 1				
Parameter	**Unit**	**Cell 1**		**Cell 2**	
Timeslot Number		0	DwPTS	0	DwPTS
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 2	
PCCPCH_Ec/Ior	dB	-3		-3	
DwPCH_Ec/Ior	dB		0		0
OCNS_Ec/Ior	dB	-3		-3	
$\hat{I}_{or}/I_{oc}$	dB	5		5	
I_{oc}	dBm/ 1.28 MHz	-75.2		-75.2	
PCCPCH RSCP, Note 1	dBm	-73.2		-73.2	
Io, Note 1	dBm/ 1.28 MHz	-69			
Propagation condition		AWGN			
	Test 2				
Parameter	**Unit**	**Cell 1**		**Cell 2**	
Timeslot Number		0	DwPTS	0	DwPTS
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 2	
PCCPCH_Ec/Ior	dB	-3		-3	
DwPCH_Ec/Ior	dB		0		0
OCNS_Ec/Ior	dB	-3		-3	
$\hat{I}_{or}/I_{oc}$	dB	7		2	
I_{oc}	dBm/ 1.28 MHz	-57.8		-54.1	
PCCPCH RSCP, Note 1	dBm	-53.8		-55.1	
Io, Note 1	dBm/ 1.28 MHz	-50			
Propagation condition		AWGN			
	Test 3				
Parameter	**Unit**	**Cell 1**		**Cell 2**	
Timeslot Number		0	DwPTS	0	DwPTS
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 2	
PCCPCH_Ec/Ior	dB	-3		-3	
DwPCH_Ec/Ior	dB		0		0
OCNS_Ec/Ior	dB	-3		-3	
$\hat{I}_{or}/I_{oc}$	dB	3		0	
I_{oc}	dBm/ 1.28 MHz	-98.7		-97	
PCCPCH RSCP, Note 1	dBm	-98.7		-100	
Io, Note 1	dBm/ 1.28 MHz	-94			
Propagation condition		AWGN			

NOTE 1: PCCPCH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.
NOTE2: In the case of multi-frequency network,the UTRA RF Channel Number can be set for the primary frequency in this test.

A.9.2.1.2 Test Requirements

The P-CCPCH RSCP measurement accuracy shall meet the requirements in section 9.1.1.1.

The rate of correct measurements observed during repeated tests shall be at least 90%.

A.9.2.2 CPICH measurements

A.9.2.2.1 CPICH RSCP

A.9.2.2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the CPICH RSCP measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.2 and applies to UE"s supporting this capability.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 2.

A.9.2.2.1.1.1 Inter frequency test parameters

Cell 1 is a UTRA TDD cell and cell 2 is a UTRA FDD cell.

CPICH RSCP inter frequency absolute accuracy requirements are tested by using test parameters in Table A.9.13.

Table A.9.13: CPICH RSCP Inter frequency tests parameters

Parameter	Unit	Test 1		Test 2	
		Cell 1	Cell 2	Cell 1	Cell 2
DL timeslot number		0 DwPTS	n.a.	0 DwPTS	n.a.
UTRA RF Channel number (NOTE 3)		Channel 1	Channel 2	Channel 1	Channel 2
CPICH_Ec/Ior	dB	n.a.	-10	n.a.	-10
PCCPCH_Ec/Ior	dB	-3	-12	-3	-12
DwPCH_Ec/Ior	dB	0	n.a.	0	n.a.
SCH_Ec/Ior	dB	n.a.	-12	n.a.	-12
PICH_Ec/Ior	dB	n.a.	-15	n.a.	-15
OCNS_Ec/Ior	dB	-3	-0.94	-3	-0.94
Ioc, Note 2	dBm/ 3.84 MHz	n.a.	-60	n.a.	-84
Ioc, Note 2	dBm/ 1.28 MHz	-57.7	n.a.	-84.7	n.a.
Îor/Ioc	dB	7	9.54	3	0
PCCPCH RSCP, Note 1	dBm	-53.7	n.a.	-84.7	n.a.
CPICH RSCP, Note 1	dBm	n.a.	-60.46	n.a.	-94
Io, Notes 1, 2	dBm/3.84 MHz	n.a.	-50	n.a.	-81
Io, Notes 1, 2	dBm/1.28 MHz	-50	n.a.	-80	n.a.
Propagation condition	-	AWGN		AWGN	

NOTE 1: PCCPCH RSCP, CPICH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.
NOTE 2: Ioc and Io are given independently for TDD and FDD cells.
NOTE 3: In the case of multi-frequency network of 1.28 Mcps TDD, the UTRA RF Channel Number can be set for the primary frequency in this test.

A.9.2.2.1.2 Test Requirements

The CPICH RSCP measurement accuracy shall meet the requirements in section 9.1.1.2.

The rate of correct measurements observed during repeated tests shall be at least 90%.

A.9.2.2.2 CPICH Ec/Io

NOTE: This section is included for consistency with numbering in section 9, currently no test covering requirements in sections 9.1.1.3 exists.

A.9.2.3 Timeslot ISCP

A.9.2.3.1 Test Purpose and Environment

The purpose of this test is to verify that the Timeslot ISCP measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.3.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 2.

A.9.2.3.1.1 Intra frequency test parameters

The Timeslot ISCP intra frequency absolute accuracy requirements are tested by using test parameters in Table A.9.14.

Table A.9.14: Timeslot ISCP Intra frequency test parameters

	Test 1				
Parameter	**Unit**	**Cell 1**		**Cell 2**	
Timeslot Number		0	DwPTS	0	DwPTS
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3		-3	
DwPCH_Ec/Ior	dB		0		0
OCNS_Ec/Ior	dB	-3		-3	
$\hat{I}_{or}/I_{oc}$	dB	5		2	
I_{oc}	dBm/1.28 MHz	-76.6			
TS ISCP, Note 1	dBm	-74.6		-71.6	
Io, Note 1	dBm/1.28 MHz	-69			
Propagation condition		AWGN			
	Test 2				
Parameter	**Unit**	**Cell 1**		**Cell 2**	
Timeslot Number		0	DwPTS	0	DwPTS
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3		-3	
DwPCH_Ec/Ior	dB		0		0
OCNS_Ec/Ior	dB	-3		-3	
$\hat{I}_{or}/I_{oc}$	dB	9		2	
I_{oc}	dBm/1.28 MHz	-60.2			
TS ISCP, Note 1	dBm	-58.2		-51.2	
Io, Note 1	dBm/1.28 MHz	-50			
Propagation condition		AWGN			
	Test 3				
Parameter	**Unit**	**Cell 1**		**Cell 2**	
Timeslot Number		0	DwPTS	0	DwPTS
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3		-3	
DwPCH_Ec/Ior	dB		0		0
OCNS_Ec/Ior	dB	-3		-3	
$\hat{I}_{or}/I_{oc}$	dB	5		3	
I_{oc}	dBm/1.28 MHz	-101.9			
TS ISCP, Note 1	dBm	-98.9		-96.9	
Io, Note 1	dBm/1.28 MHz	-94			
Propagation condition		AWGN			

NOTE 1: TS ISCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.
NOTE 2: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test.

A.9.2.3.2 Test Requirements

The Timeslot ISCP measurement accuracy shall meet the requirements in section 9.1.1.3.

The rate of correct measurements observed during repeated tests shall be at least 90%.

A.9.2.4 UTRA carrier RSSI

A.9.2.4.1 Test Purpose and Environment

The purpose of this test is to verify that the UTRA Carrier RSSI measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.4.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 2.

A.9.2.4.1.1 Inter frequency test parameters

Both UTRA Carrier RSSI absolute and relative accuracy requirements are tested by using test parameters in Table A.9.15.

Table A.9.15: UTRA Carrier RSSI Inter frequency tests parameters

	Test 1				
Parameter	**Unit**	**Cell 1**		**Cell 2**	
Timeslot Number		0	DwPTS	0	DwPTS
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 2	
PCCPCH_Ec/Ior	dB	-3		-3	
DwPCH_Ec/Ior	dB		0		0
OCNS_Ec/Ior	dB	-3		-3	
$\hat{I}_{or}/I_{oc}$	dB	5		5	
I_{oc}	dBm/1.28 MHz	-75.2		-75.2	
Io, Note 1	dBm/1.28 MHz	-69			
Propagation condition		AWGN			
	Test 2				
Parameter	**Unit**	**Cell 1**		**Cell 2**	
Timeslot Number		0	DwPTS	0	DwPTS
UTRA RF Channel Number (NOTE 2)r		Channel 1		Channel 2	
PCCPCH_Ec/Ior	dB	-3		-3	
DwPCH_Ec/Ior	dB		0		0
OCNS_Ec/Ior	dB	-3		-3	
$\hat{I}_{or}/I_{oc}$	dB	7		2	
I_{oc}	dBm/1.28 MHz	-57.8		-54.1	
Io, Note 1	dBm/1.28 MHz	-50			
Propagation condition		AWGN			
	Test 3				
Parameter	**Unit**	**Cell 1**		**Cell 2**	
Timeslot Number		0	DwPTS	0	DwPTS
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 2	
PCCPCH_Ec/Ior	dB	-3		-3	
DwPCH_Ec/Ior	dB		0		0
OCNS_Ec/Ior	dB	-3		-3	
$\hat{I}_{or}/I_{oc}$	dB	3		0	
I_{oc}	dBm/1.28 MHz	-98.7		-97	
Io, Note 1	dBm/1.28 MHz	-94			
Propagation condition		AWGN			

NOTE 1: Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.
NOTE 2: In the case of multi-frequecny network,the UTRA RF Channel Number is the primary frequency"s channel number.

A.9.2.4.2 Test Requirements

The UTRA Carrier RSSI absolute and relative measurement accuracy shall meet the requirements in section 9.1.1.4.

The rate of correct measurements observed during repeated tests shall be at least 90%.

A.9.2.5 GSM carrier RSSI

A.9.2.5.1 Test Purpose and Environment

The purpose of this test is to verify that the GSM Carrier RSSI measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.5.

Cell 1 is a UTRA TDD cell and cell 2 is a GSM cell. In the measurement control information it is indicated to the UE that periodic reporting of the GSM carrier RSSI measurement is used.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 2.

A.9.2.5.1.1 Inter RAT test parameters

GSM carrier RSSI accuracy requirements are tested by using test parameters in Table A.9.16A and A.9.16B.

The limits of the GSM test parameters are defined in [21].

Table A.9.16A: General GSM Carrier RSSI test parameters

Parameter	Unit	Value	Comment
DCH parameters		DL reference measurement channel 12.2 kbps	As specified in TS 25.102 section A.2.2
Power Control		On	
Target quality value on DTCH	BLER	0.01	
Inter-RAT measurement quantity		GSM carrier RSSI	
BSIC verification required		No	
Monitored cell list size		6 GSM neighbours including ARFCN 1	

Table A.9.16B: Cell 1 specific GSM Carrier RSSI test parameters

Parameter	Unit	Cell 1	
DL timeslot number		0	DwPTS
UTRA RF Channel number (NOTE)		Channel 1	
PCCPCH_Ec/Ior	dB	-3	
DwPCH_Ec/Ior	dB		0
OCNS_Ec/Ior	dB	-3	
Îor/Ioc	dB	3	
Ioc	dBm / 1.28MHz	-70	
Propagation condition		AWGN	
NOTE: In the case of multi-frequency, the UTRA RF Channel Number can be set for the primary frequency in this test.			

A.9.2.5.2 Test Requirements

The GSM Carrier RSSI measurement accuracy shall meet the requirements in section 9.1.5.

The rate of correct measurements observed during repeated tests shall be at least 90%.

A.9.2.6 SIR

NOTE: This section is included for consistency with numbering in section 9, currently no test covering requirements in sections 9.1.1.6 exists.

A.9.2.7 Transport channel BLER

NOTE: This section is included for consistency with numbering in section 9, currently no test covering requirements in sections 9.1.1.7 exists.

A.9.2.8 SFN-SFN observed time difference

A.9.2.8.1 SFN-SFN observed time difference type 1

A.9.2.8.1.1 Test Purpose and Environment

The purpose of this test is to verify that the SFN-SFN observed time difference type 1 measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.8.

Cell 1 and cell 2 shall be synchronised. During the test, the timing difference between cell 1 and cell 2 can be set to valid values in the range 0…3276800 chip.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 2.

A.9.2.8.1.1.1 Intra frequency test parameters

The SFN-SFN observed time difference type 1 accuracy requirements in the intra-frequency case are tested by using test parameters in Table A.9.17.

Table A.9.17: SFN-SFN observed time difference type 1 Intra frequency test parameters

	Test 1					
Parameter	**Unit**	**Cell 1**		**Cell 2**		
Timeslot Number		0	DwPTS	0	DwPTS	
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 1		
PCCPCH_Ec/Ior	dB	-3		-3		
DwPCH_Ec/Ior	dB		0		0	
OCNS_Ec/Ior	dB	-3		-3		
$\hat{I}_{or}/I_{oc}$	dB	5		2		
I_{oc}	dBm/1.28 MHz	-76.6				
PCCPCH RSCP, Note 1	dBm	-74.6		-77.6		
Io, Note 1	dBm/1.28 MHz	-69				
Propagation condition		AWGN				
	Test 2					
Parameter	**Unit**	**Cell 1**		**Cell 2**		
Timeslot Number		0	DwPTS	0	DwPTS	
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 1		
PCCPCH_Ec/Ior	dB	-3		-3		
DwPCH_Ec/Ior	dB		0		0	
OCNS_Ec/Ior	dB	-3		-3		
$\hat{I}_{or}/I_{oc}$	dB	9		2		
I_{oc}	dBm/1.28 MHz	-60.2				
PCCPCH RSCP, Note 1	dBm	-54.2		-61.2		
Io, Note 1	dBm/1.28 MHz	-50				
Propagation condition		AWGN				
	Test 3					
Parameter	**Unit**	**Cell 1**		**Cell 2**		
Timeslot Number		0	DwPTS	0	DwPTS	
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 1		
PCCPCH_Ec/Ior	dB	-3		-3		
DwPCH_Ec/Ior	dB		0		0	
OCNS_Ec/Ior	dB	-3		-3		
$\hat{I}_{or}/I_{oc}$	dB	5		3		
I_{oc}	dBm/1.28 MHz	-101.9				
PCCPCH RSCP, Note 1	dBm	-99.9		-101.9		
Io, Note 1	dBm/1.28 MHz	-94				
Propagation condition		AWGN				

NOTE 1: PCCPCH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.
NOTE 2: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test.

A.9.2.8.1.1.2 Inter frequency test parameters

The SFN-SFN observed time difference type 1 accuracy requirements in the inter-frequency case are tested by using test parameters in Table A.9.18.

Table A.9.18: SFN-SFN observed time difference type 1 Inter frequency tests parameters

	Test 1				
Parameter	**Unit**	**Cell 1**		**Cell 2**	
Timeslot Number		0	DwPTS	0	DwPTS
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 2	
PCCPCH_Ec/Ior	dB	-3		-3	
DwPCH_Ec/Ior	dB		0		0
OCNS_Ec/Ior	dB	-3		-3	
$\hat{I}_{or}/I_{oc}$	dB	5		5	
I_{oc}	dBm/1.28 MHz	-75.2		-75.2	
PCCPCH RSCP, Note 1	dBm	-73.2		-73.2	
Io, Note 1	dBm/1.28 MHz	-69			
Propagation condition		AWGN			
	Test 2				
Parameter	**Unit**	**Cell 1**		**Cell 2**	
Timeslot Number		0	DwPTS	0	DwPTS
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 2	
PCCPCH_Ec/Ior	dB	-3		-3	
DwPCH_Ec/Ior	dB		0		0
OCNS_Ec/Ior	dB	-3		-3	
$\hat{I}_{or}/I_{oc}$	dB	7		2	
I_{oc}	dBm/1.28 MHz	-57.8		-54.1	
PCCPCH RSCP, Note 1	dBm	-53.8		-55.1	
Io, Note 1	dBm/1.28 MHz	-50			
Propagation condition		AWGN			
	Test 3				
Parameter	**Unit**	**Cell 1**		**Cell 2**	
Timeslot Number		0	DwPTS	0	DwPTS
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 2	
PCCPCH_Ec/Ior	dB	-3		-3	
DwPCH_Ec/Ior	dB		0		0
OCNS_Ec/Ior	dB	-3		-3	
$\hat{I}_{or}/I_{oc}$	dB	3		0	
I_{oc}	dBm/1.28 MHz	-98.7		-97	
PCCPCH RSCP, Note 1	dBm	-98.7		-100	
Io, Note 1	dBm/1.28 MHz	-94			
Propagation condition		AWGN			

NOTE 1: PCCPCH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.
NOTE 2: In the case of multi-frequency network,the UTRA RF Channel Number can be set for the primary frequency.

A.9.2.8.1.2 Test Requirements

The SFN-SFN observed time difference type 1 measurement accuracy shall meet the requirements in section 9.1.1.8.

The rate of correct measurements observed during repeated tests shall be at least 90%.

A.9.2.8.2 SFN-SFN observed time difference type 2

A.9.2.8.2.1 Test Purpose and Environment

The purpose of this test is to verify that the SFN-SFN observed time difference type 2 measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.8.

Cell 1 and cell 2 shall be synchronised and share the same frame timing. During the test, the timing difference between cell 1 and cell 2 can be set to valid values in the rang from -432 to 432 chip.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 2.

A.9.2.8.2.1.1 Intra frequency test parameters

The SFN-SFN observed time difference type 2 accuracy requirements in the intra-frequency case are tested by using test parameters in Table A.9.18A.

Table A.9.18A: SFN-SFN observed time difference type 2 Intra frequency test parameters

	Test 1					
Parameter	**Unit**	**Cell 1**		**Cell 2**		
Timeslot Number		0	DwPTS	0	DwPTS	
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 1		
PCCPCH_Ec/Ior	dB	-3		-3		
DwPCH_Ec/Ior	dB		0		0	
OCNS_Ec/Ior	dB	-3		-3		
$\hat{I}_{or}/I_{oc}$	dB	5		2		
I_{oc}	dBm/1.28 MHz	-76.6				
PCCPCH RSCP, Note 1	dBm	-74.6		-77.6		
Io, Note 1	dBm/1.28 MHz	-69				
Propagation condition		AWGN				
	Test 2					
Parameter	**Unit**	**Cell 1**		**Cell 2**		
Timeslot Number		0	DwPTS	0	DwPTS	
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 1		
PCCPCH_Ec/Ior	dB	-3		-3		
DwPCH_Ec/Ior	dB		0		0	
OCNS_Ec/Ior	dB	-3		-3		
$\hat{I}_{or}/I_{oc}$	dB	9		2		
I_{oc}	dBm/1.28 MHz	-60.2				
PCCPCH RSCP, Note 1	dBm	-54.2		-61.2		
Io, Note 1	dBm/1.28 MHz	-50				
Propagation condition		AWGN				
	Test 3					
Parameter	**Unit**	**Cell 1**		**Cell 2**		
Timeslot Number		0	DwPTS	0	DwPTS	
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 1		
PCCPCH_Ec/Ior	dB	-3		-3		
DwPCH_Ec/Ior	dB		0		0	
OCNS_Ec/Ior	dB	-3		-3		
$\hat{I}_{or}/I_{oc}$	dB	5		3		
I_{oc}	dBm/1.28 MHz	-101.9				
PCCPCH RSCP, Note 1	dBm	-99.9		-101.9		
Io, Note 1	dBm/1.28 MHz	-94				
Propagation condition		AWGN				

NOTE 1: PCCPCH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.
NOTE2: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test.

A.9.2.8.2.1.2 Inter frequency test parameters

The SFN-SFN observed time difference type 2 accuracy requirements in the inter-frequency case are tested by using test parameters in Table A.9.18B.

Table A.9.18B: SFN-SFN observed time difference type 2 Inter frequency tests parameters

	Test 1				
Parameter	**Unit**	**Cell 1**		**Cell 2**	
Timeslot Number		0	DwPTS	0	DwPTS
UTRA RF Channel Number (NOTE 2)r		Channel 1		Channel 2	
PCCPCH_Ec/Ior	dB	-3		-3	
DwPCH_Ec/Ior	dB		0		0
OCNS_Ec/Ior	dB	-3		-3	
$\hat{I}_{or}/I_{oc}$	dB	5		5	
I_{oc}	dBm/1.28 MHz	-75.2		-75.2	
PCCPCH RSCP, Note 1	dBm	-73.2		-73.2	
Io, Note 1	dBm/1.28 MHz	-69			
Propagation condition		AWGN			
	Test 2				
Parameter	**Unit**	**Cell 1**		**Cell 2**	
Timeslot Number		0	DwPTS	0	DwPTS
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 2	
PCCPCH_Ec/Ior	dB	-3		-3	
DwPCH_Ec/Ior	dB		0		0
OCNS_Ec/Ior	dB	-3		-3	
$\hat{I}_{or}/I_{oc}$	dB	7		2	
I_{oc}	dBm/1.28 MHz	-57.8		-54.1	
PCCPCH RSCP, Note 1	dBm	-53.8		-55.1	
Io, Note 1	dBm/1.28 MHz	-50			
Propagation condition		AWGN			
	Test 3				
Parameter	**Unit**	**Cell 1**		**Cell 2**	
Timeslot Number		0	DwPTS	0	DwPTS
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 2	
PCCPCH_Ec/Ior	dB	-3		-3	
DwPCH_Ec/Ior	dB		0		0
OCNS_Ec/Ior	dB	-3		-3	
$\hat{I}_{or}/I_{oc}$	dB	3		0	
I_{oc}	dBm/1.28 MHz	-98.7		-97	
PCCPCH RSCP, Note 1	dBm	-98.7		-100	
Io, Note 1	dBm/1.28 MHz	-94			
Propagation condition		AWGN			
NOTE 1: PCCPCH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. NOTE2: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency"s channel number.					

A.9.2.8.2.2 Test Requirements

The SFN-SFN observed time difference type 2 measurement accuracy shall meet the requirements in section 9.1.1.8.

The rate of correct measurement observed during repeated tests shall be at least 90%.

A.9.2.9 Observed time difference to GSM cell

NOTE: This section is included for consistency with numbering in section 9, currently no test covering requirements in sections 9.1.1.9 exists.

A.9.2.10 SFN-CFN observed time difference

A.9.2.10.1 Test Purpose and Environment

The purpose of this test is to verify that the SFN-CFN observed time difference measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.10.

Cell 1 and cell 2 shall be synchronised. During the test, the timing difference between cell 1 and cell 2 can be set to any value from 0…256 frames.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 2.

A.9.2.10.1.1 Intra frequency test parameters

The SFN-CFN observed time difference accuracy requirements in the intra-frequency case are tested by using test parameters in Table A.9.19.

Table A.9.19: SFN-CFN observed time difference Intra frequency test parameters

	Test 1				
Parameter	**Unit**	**Cell 1**		**Cell 2**	
Timeslot Number		0	DwPTS	0	DwPTS
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3		-3	
DwPCH_Ec/Ior	dB		0		0
OCNS_Ec/Ior	dB	-3		-3	
$\hat{I}_{or}/I_{oc}$	dB	5		2	
I_{oc}	dBm/1.28 MHz	-76.6			
PCCPCH RSCP, Note 1	dBm	-74.6		-77.6	
Io, Note 1	dBm/1.28 MHz	-69			
Propagation condition		AWGN			
	Test 2				
Parameter	**Unit**	**Cell 1**		**Cell 2**	
Timeslot Number		0	DwPTS	0	DwPTS
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3		-3	
DwPCH_Ec/Ior	dB		0		0
OCNS_Ec/Ior	dB	-3		-3	
$\hat{I}_{or}/I_{oc}$	dB	9		2	
I_{oc}	dBm/1.28 MHz	-60.2			
PCCPCH RSCP, Note 1	dBm	-54.2		-61.2	
Io, Note 1	dBm/1.28 MHz	-50			
Propagation condition		AWGN			
	Test 3				
Parameter	**Unit**	**Cell 1**		**Cell 2**	
Timeslot Number		0	DwPTS	0	DwPTS
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3		-3	
DwPCH_Ec/Ior	dB		0		0
OCNS_Ec/Ior	dB	-3		-3	
$\hat{I}_{or}/I_{oc}$	dB	5		3	
I_{oc}	dBm/1.28 MHz	-101.9			
PCCPCH RSCP, Note 1	dBm	-99.9		-101.9	
Io, Note 1	dBm/1.28 MHz	-94			
Propagation condition		AWGN			

NOTE 1: PCCPCH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.
NOTE2: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test.

A.9.2.10.1.2 Inter frequency test parameters

The SFN-CFN observed time difference accuracy requirements in the inter-frequency case are tested by using test parameters in Table A.9.20.

Table A.9.20: SFN-CFN observed time difference Inter frequency tests parameters

	Test 1				
Parameter	**Unit**	**Cell 1**		**Cell 2**	
Timeslot Number		0	DwPTS	0	DwPTS
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 2	
PCCPCH_Ec/Ior	dB	-3		-3	
DwPCH_Ec/Ior	dB		0		0
OCNS_Ec/Ior	dB	-3		-3	
$\hat{I}_{or}/I_{oc}$	dB	5		5	
I_{oc}	dBm/1.28 MHz	-75.2		-75.2	
PCCPCH RSCP, Note 1	dBm	-73.2		-73.2	
Io, Note 1	dBm/1.28 MHz	-69			
Propagation condition		AWGN			
	Test 2				
Parameter	**Unit**	**Cell 1**		**Cell 2**	
Timeslot Number		0	DwPTS	0	DwPTS
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 2	
PCCPCH_Ec/Ior	dB	-3		-3	
DwPCH_Ec/Ior	dB		0		0
OCNS_Ec/Ior	dB	-3		-3	
$\hat{I}_{or}/I_{oc}$	dB	7		2	
I_{oc}	dBm/1.28 MHz	-57.8		-54.1	
PCCPCH RSCP, Note 1	dBm	-53.8		-55.1	
Io, Note 1	dBm/1.28 MHz	-50			
Propagation condition		AWGN			
	Test 3				
Parameter	**Unit**	**Cell 1**		**Cell 2**	
Timeslot Number		0	DwPTS	0	DwPTS
UTRA RF Channel Number (NOTE 2)		Channel 1		Channel 2	
PCCPCH_Ec/Ior	dB	-3		-3	
DwPCH_Ec/Ior	dB		0		0
OCNS_Ec/Ior	dB	-3		-3	
$\hat{I}_{or}/I_{oc}$	dB	3		0	
I_{oc}	dBm/1.28 MHz	-98.7		-97	
PCCPCH RSCP, Note 1	dBm	-98.7		-100	
Io, Note 1	dBm/1.28 MHz	-94			
Propagation condition		AWGN			

NOTE 1: PCCPCH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.
NOTE2: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test.

A.9.2.10.2 Test Requirements

The SFN-CFN observed time difference measurement accuracy shall meet the requirements in section 9.1.1.10.

The rate of correct measurements observed during repeated tests shall be at least 90%.

A.9.2.11 UE transmitted power

A.9.2.11.1 Test purpose and Environment

The purpose of the test is to verify that the UE transmitted power measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.2.1.

The test parameters are given in Table A.9.21 and A.9.22 below. In the measurement control information it shall be indicated to the UE that periodic reporting of the UE transmitted power measurement shall be used.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 2.

Table A.9.21: General test parameters for UE transmitted power

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2
Power Control		On	
Target quality value on DTCH	BLER	0.01	

Table A.9.22: Cell Specific parameters for UE transmitted power

Parameter	Unit	Cell 1	
Timeslot Number		0	DwPTS
UTRA RF Channel Number (NOTE 2)		Channel 1	
PCCPCH_Ec/Ior	dB	-3	
DwPCH_Ec/Ior	dB		0
OCNS_Ec/Ior	dB	-3	
$\hat{I}_{or}/I_{oc}$	dB	3	
I_{oc}	dBm/1.28 MHz	-70	
PCCPCH RSCP, Note 1	dBm	-70	
Propagation Condition		AWGN	
NOTE 1: PCCPCH RSCP level has been calculated from other parameters for information purposes. They are not settable parameters themselves. NOTE2: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test.			

A.9.2.11.1.1 Test procedure

1) Set the UE power and Maximum allowed UL TX power to the maximum power for that UE power class specified in section 9.1.2.1.

2) Send continuously Up power control commands to the UE during the entire test.

3) Check the UE reported value

4) Map the UE reported value to accuracy requirement and define the test limits

5) Measure the output power of the UE. The output power shall be averaged over one timeslot.

6) Check that the measured UE transmitted power is within the limits defined in step 4).

7) Decrease the Maximum allowed UL TX power with 1dB and signal the new value to the UE.

8) Repeat from step 3) until the entire specified range for the UE transmitted power measurement has been tested, i.e. the accuracy requirement for the UE transmitted power measurement is specified 10dB below the maximum power for the UE power class specified in section 9.1.2.1.

A.9.2.11.2 Test requirements

The UE transmitted power measurement accuracy shall meet the requirements in section 9.1.2.1.

The rate of correct measurements observed during repeated tests shall be at least 90%.

A.9.3 Measurement Performance for UE (7.68 Mcps TDD option)

A.9.3.1 P-CCPCH RSCP

A.9.3.1.1 Test Purpose and Environment

The purpose of this test is to verify that the P-CCPCH RSCP measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.1.

Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing. The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12.

A.9.3.1.1.1 Intra frequency test parameters

In this case all cells are on the same frequency. The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2.

Both P-CCPCH RSCP intra frequency absolute and relative accuracy requirements are tested by using test parameters in Table A.9.23.

Table A.9.23: P-CCPCH RSCP Intra frequency test parameters

Parameter	Unit	Test 1		Test 2		Test 3	
		Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
DL timeslot number		0	0	0	0	0	0
UTRA RF Channel number		Channel 1		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3		-3		-3	
SCH_Ec/Ior	dB	-9		-9		-9	
SCH_t_{offset}		0	5	0	5	0	5
OCNS_Ec/Ior	dB	-3,12		-3,12		-3,12	
Ioc	dBm / 7.68 MHz	-75.7		-59.8		-98.7	
Îor/Ioc	dB	5	2	9	2	3	0
PCCPCH RSCP, Note 1	dBm	-73.7	-76.7	-53.8	-60.8	-98.7	-101.7
Io, Note 1	dBm / 7.68 MHz	-69		-50		-94	
Propagation condition		AWGN		AWGN		AWGN	
NOTE 1: PCCPCH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.							

A.9.3.1.1.2 Inter frequency test parameters

In this case both cells are on different frequencies. The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2.

P-CCPCH RSCP inter frequency relative accuracy requirements are tested by using test parameters in Table A.9.24.

Table A.9.24: P-CCPCH RSCP Inter frequency tests parameters

Parameter	Unit	Test 1		Test 2		Test 3	
		Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
DL timeslot number		0	2	0	2	0	2
UTRA RF Channel number		Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
PCCPCH_Ec/Ior	dB	-3		-3		-3	
SCH_Ec/Ior	dB	-9		-9		-9	
SCH_t_{offset}		0	5	0	5	0	5
OCNS_Ec/Ior	dB	-3,12		-3,12		-3,12	
Ioc	dBm / 7.68 MHz	-75.2	-75.2	-57.8	-54.1	-98.7	-97
$\hat{I}$or/Ioc	dB	5	5	7	2	3	0
PCCPCH RSCP, Note 1	dBm	-73.2	-73.2	-54.8	-55.1	-98.7	-100
Io, Note 1	dBm / 7.68 MHz	-69		-50		-94	
Propagation condition		AWGN		AWGN		AWGN	
NOTE 1: PCCPCH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.							

A.9.3.1.2 Test Requirements

The P-CCPCH RSCP measurement accuracy shall meet the requirements in section 9.1.1.1.

The rate of correct measurements observed during repeated tests shall be at least 90%.

A.9.3.2 CPICH measurements

A.9.3.2.1 CPICH RSCP

A.9.3.2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the CPICH RSCP measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.2 and applies to UE"s supporting this capability.

The DL DPCH shall be transmitted in timeslot 1 and the UL DPCH shall be transmitted in timeslot 3.

A.9.3.2.1.1.1 Inter frequency test parameters

In this case both cells are on different frequencies. Cell 1 is a UTRA TDD cell and cell 2 is a UTRA FDD cell. No second Beacon timeslot shall be provided for cell 1.

CPICH RSCP inter frequency absolute accuracy requirements are tested by using test parameters in Table A.9.25.

Table A.9.25: CPICH RSCP Inter frequency tests parameters

Parameter	Unit	Test 1		Test 2	
		Cell 1	Cell 2	Cell 1	Cell 2
DL timeslot number		0	n.a.	0	n.a.
UTRA RF Channel number		Channel 1	Channel 2	Channel 1	Channel 2
CPICH_Ec/Ior	dB	n.a.	-10	n.a.	-10
PCCPCH_Ec/Ior	dB	-3	-12	-3	-12
SCH_Ec/Ior	dB	-9	-12	-9	-12
SCH_t_{offset}		5	n.a.	5	n.a.
PICH_Ec/Ior	dB	n.a.	-15	n.a.	-15
OCNS_Ec/Ior	dB	-3.12	-0.94	-3.12	-0.94
Ioc	dBm/ 7.68 MHz	-57.7	-60	-84.7	-84
Îor/Ioc	dB	7	9.54	3	0
PCCPCH RSCP, Note 1	dBm	-53.7	n.a.	-84.7	n.a.
CPICH RSCP, Note 1	dBm	n.a.	-60.46	n.a.	-94
Io, Note 1	dBm/ 7.68 MHz	-50	-50	-80	-81
Propagation condition	-	AWGN		AWGN	
NOTE 1: PCCPCH RSCP, CPICH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.					

A.9.3.2.1.2 Test Requirements

The CPICH RSCP measurement accuracy shall meet the requirements in section 9.1.1.2.

The rate of correct measurements observed during repeated tests shall be at least 90%.

A.9.3.2.2 CPICH Ec/Io

NOTE: This section is included for consistency with numbering in section 9, currently no test covering requirements in sections 9.1.1.3 exists.

A.9.3.3 Timeslot ISCP

A.9.3.3.1 Test Purpose and Environment

The purpose of this test is to verify that the Timeslot ISCP measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.3.

Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing. The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12.

A.9.3.3.1.1 Intra frequency test parameters

In this case all cells are on the same frequency. The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2.

The Timeslot ISCP intra frequency absolute accuracy requirements are tested by using test parameters in Table A.9.26.

Table A.9.26: Timeslot ISCP Intra frequency test parameters

Parameter	Unit	Test 1		Test 2		Test 3	
		Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
DL timeslot number		0	0	0	0	0	0
UTRA RF Channel number		Channel 1		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3		-3		-3	
SCH_Ec/Ior	dB	-9		-9		-9	
SCH_t_{offset}		0	5	0	5	0	5
OCNS_Ec/Ior	dB	-3,12		-3,12		-3,12	
Ioc	dBm / 7.68 MHz	-75.7		-59.8		-98.7	
Îor/Ioc	dB	5	2	9	2	3	0
Timeslot ISCP, Note 1	dBm	-73.7	-70.7	-57.8	-50.8	-98.7	-95.7
Io, Note 1	dBm / 7.68 MHz	-69		-50		-94	
Propagation condition		AWGN		AWGN		AWGN	
NOTE 1: Timeslot ISCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.							

A.9.3.3.2 Test Requirements

The Timeslot ISCP measurement accuracy shall meet the requirements in section 9.1.1.3.

The rate of correct measurements observed during repeated tests shall be at least 90%.

A.9.3.4 UTRA Carrier RSSI

A.9.3.4.1 Test Purpose and Environment

The purpose of this test is to verify that the UTRA Carrier RSSI measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.4.

Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing. The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12.

A.9.3.4.1.1 Inter frequency test parameters

In this case both cells are on different frequencies. The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2.

Both UTRA Carrier RSSI absolute and relative accuracy requirements are tested by using test parameters in Table A.9.27.

Table A.9.27: UTRA Carrier RSSI Inter frequency tests parameters

Parameter	Unit	Test 1		Test 2		Test 3	
		Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
DL timeslot number		0	2	0	2	0	2
UTRA RF Channel number		Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
PCCPCH_Ec/Ior	dB	-3		-3		-3	
SCH_Ec/Ior	dB	-9		-9		-9	
SCH_t_{offset}		0	5	0	5	0	5
OCNS_Ec/Ior	dB	-3,12		-3,12		-3,12	
Ioc	dBm / 7.68 MHz	-75.2	-75.2	-57.8	-54.1	-98.7	-97
$\hat{I}$or/Ioc	dB	5	5	7	2	3	0
Io, Note 1	dBm / 7.68 MHz	-69		-50		-94	
Propagation condition		AWGN		AWGN		AWGN	
NOTE 1: Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.							

A.9.3.4.2 Test Requirements

The UTRA Carrier RSSI absolute measurement accuracy shall meet the requirements in section 9.1.1.4.

The UTRA Carrier RSSI relative measurement accuracy shall meet the requirements in Table A.9.28 by taking into account the effect of thermal noise and noise added by the receiver.

Table A.9.28: UTRA Carrier RSSI relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm/7.68 MHz]
UTRA Carrier RSSI	dBm	-4…5.2	-7…8.2	-94…-87
	dBm	± 4	± 7	-87...-70
	dBm	± 6	± 9	-70...-50

The rate of correct measurements observed during repeated tests shall be at least 90%.

A.9.3.5 GSM carrier RSSI

A.9.3.5.1 Test Purpose and Environment

The purpose of this test is to verify that the GSM Carrier RSSI measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.5.

Cell 1 is a UTRA TDD cell and cell 2 is a GSM cell. The Beacon timeslot shall be provided in timeslot 0 and no second Beacon timeslot shall be provided for cell 1. In the measurement control information it is indicated to the UE that periodic reporting of the GSM carrier RSSI measurement is used. The DL DPCH shall be transmitted in timeslot 1 and the UL DPCH shall be transmitted in timeslot 3.

A.9.3.5.1.1 Inter frequency test parameters

GSM carrier RSSI accuracy requirements are tested by using test parameters in Table A.9.29 and A.9.30.

The limits of the GSM test parameters are defined in [21].

Table A.9.29: General GSM Carrier RSSI test parameters

Parameter	Unit	Value	Comment
DCH parameters		DL reference measurement channel 12.2 kbps	As specified in TS 25.102 section A.2.2
Power Control		On	
Target quality value on DTCH	BLER	0.01	
Inter-RAT measurement quantity		GSM carrier RSSI	
BSIC verification required		No	
Monitored cell list size		6 GSM neighbours including ARFCN 1	

Table A.9.30: Cell 1 specific GSM Carrier RSSI test parameters

Parameter	Unit	Cell 1	
DL timeslot number		0	1
UTRA RF Channel number		Channel 1	
PCCPCH_Ec/Ior	dB	-3	n.a.
SCH_Ec/Ior	dB	-9	n.a.
SCH_t_{offset}		0	n.a.
OCNS_Ec/Ior	dB	-3,12	Note 2
DPCH_Ec/Ior	dB	n.a.	Note 1
Îor/Ioc	dB	6	6
Io, Note 1	dBm / 7.68 MHz	-70	
Propagation condition		AWGN	
Note 1: The DPCH level is controlled by the power control loop Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Ior.			

A.9.3.5.2 Test Requirements

The GSM Carrier RSSI measurement accuracy shall meet the requirements in section 9.1.5.

The rate of correct measurements observed during repeated tests shall be at least 90%.

A.9.3.6 (void)

A.9.3.7 (void)

A.9.3.8 SFN-SFN observed time difference

A.9.3.8.1 SFN-SFN observed time difference type 1

A.9.3.8.1.1 Test Purpose and Environment

The purpose of this test is to verify that the SFN-SFN observed time difference type 1 measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.8.

Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing. During the test, the timing difference between cell 1 and cell 2 can be set to any value from 0…19660800 chip.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12. The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2.

A.9.3.8.1.1.1 Intra frequency test parameters

In this case all cells are on the same frequency. The SFN-SFN observed time difference type 1 accuracy requirements in the intra-frequency case are tested by using test parameters in Table A.9.31.

Table A.9.31: SFN-SFN observed time difference type 1 Intra frequency test parameters

Parameter	Unit	Test 1		Test 2		Test 3	
		Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
DL timeslot number		0	2	0	2	0	2
UTRA RF Channel number		Channel 1		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3		-3		-3	
SCH_Ec/Ior	dB	-9		-9		-9	
SCH_t_{offset}		0	5	0	5	0	5
OCNS_Ec/Ior	dB	-3,12		-3,12		-3,12	
Ioc	dBm / 7.68 MHz	-75.2	-75.2	-57.8	-54.7	-98.7	-98.7
Îor/Ioc	dB	5	5	7	3	3	3
Io, Note 1	dBm / 7.68 MHz	-69		-50		-94	
Propagation condition		AWGN		AWGN		AWGN	
NOTE 1: Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.							

A.9.3.8.1.1.2 Inter frequency test parameters

In this case both cells are on different frequencies. The SFN-SFN observed time difference type 2 accuracy requirements in the inter-frequency case are tested by using test parameters in Table A.9.32.

Table A.9.32: SFN-SFN observed time difference type 1 Inter frequency tests parameters

Parameter	Unit	Test 1		Test 2		Test 3	
		Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
DL timeslot number		0	2	0	2	0	2
UTRA RF Channel number		Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
PCCPCH_Ec/Ior	dB	-3		-3		-3	
SCH_Ec/Ior	dB	-9		-9		-9	
SCH_t_{offset}		0	5	0	5	0	5
OCNS_Ec/Ior	dB	-3,12		-3,12		-3,12	
Ioc	dBm / 7.68 MHz	-75.2	-75.2	-57.8	-54.7	-98.7	-98.7
Îor/Ioc	dB	5	5	7	3	3	3
Io, Note 1	dBm / 7.68 MHz	-69		-50		-94	
Propagation condition		AWGN		AWGN		AWGN	
NOTE 1: Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.							

A.9.3.8.1.2 Test Requirements

The SFN-SFN observed time difference type 1 measurement accuracy shall meet the requirements in section 9.1.1.8.

The rate of correct measurements observed during repeated tests shall be at least 90%.

A.9.3.8.2 SFN-SFN observed time difference type 2

A.9.3.8.2.1 Test Purpose and Environment

The purpose of this test is to verify that the SFN-SFN observed time difference type 2 measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.8.

Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing. During the test, the timing difference between cell 1 and cell 2 can be set to any value from -2560 ... +2560 chip.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12. The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2.

A.9.3.8.2.1.1 Intra frequency test parameters

In this case all cells are on the same frequency. The SFN-SFN observed time difference type 2 accuracy requirements in the intra-frequency case are tested by using test parameters in Table A.9.33.

Table A.9.33: SFN-SFN observed time difference type 2 Intra frequency test parameters

Parameter	Unit	Test 1		Test 2		Test 3	
		Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
DL timeslot number		0	2	0	2	0	2
UTRA RF Channel number		Channel 1		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3		-3		-3	
SCH_Ec/Ior	dB	-9		-9		-9	
SCH_t_{offset}		0	5	0	5	0	5
OCNS_Ec/Ior	dB	-3,12		-3,12		-3,12	
Ioc	dBm / 7.68 MHz	-75.2	-75.2	-57.8	-54.7	-98.7	-98.7
Îor/Ioc	dB	5	5	7	3	3	3
Io, Note 1	dBm / 7.68 MHz	-69		-50		-94	
Propagation condition		AWGN		AWGN		AWGN	
NOTE 1: Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.							

A.9.3.8.2.1.2 Inter frequency test parameters

In this case both cells are on different frequencies. The SFN-SFN observed time difference type 2 accuracy requirements in the inter-frequency case are tested by using test parameters in Table A.9.34.

Table A.9.34: SFN-SFN observed time difference type 2 Inter frequency tests parameters

Parameter	Unit	Test 1		Test 2		Test 3	
		Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
DL timeslot number		0	2	0	2	0	2
UTRA RF Channel number		Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
PCCPCH_Ec/Ior	dB	-3		-3		-3	
SCH_Ec/Ior	dB	-9		-9		-9	
SCH_t_{offset}		0	5	0	5	0	5
OCNS_Ec/Ior	dB	-3,12		-3,12		-3,12	
Ioc	dBm / 7.68 MHz	-75.2	-75.2	-57.8	-54.7	-98.7	-98.7
$\hat{I}$or/Ioc	dB	5	5	7	3	3	3
Io, Note 1	dBm / 7.68 MHz	-69		-50		-94	
Propagation condition		AWGN		AWGN		AWGN	
NOTE 1: Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.							

A.9.3.8.2.2 Test Requirements

The SFN-SFN observed time difference type 2 measurement accuracy shall meet the requirements in section 9.1.1.8.

The rate of correct measurements observed during repeated tests shall be at least 90%.

A.9.3.9 Observed time difference to GSM cell

NOTE: This section is included for consistency with numbering in section 9, currently no test covering requirements in sections 9.1.1.9 exists.

A.9.3.10 SFN-CFN observed time difference

A.9.3.10.1 Test Purpose and Environment

The purpose of this test is to verify that the SFN-CFN observed time difference measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.10.

Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing. During the test, the timing difference between cell 1 and cell 2 can be set to any value from 0…256 frames.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12. The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2.

A.9.3.10.1.1 Intra frequency test parameters

In this case all cells are on the same frequency. The SFN-CFN observed time difference accuracy requirements in the intra-frequency case are tested by using test parameters in Table A.9.35.

Table A.9.35: SFN-CFN observed time difference Intra frequency test parameters

Parameter	Unit	Test 1		Test 2		Test 3	
		Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
DL timeslot number		0	2	0	2	0	2
UTRA RF Channel number		Channel 1		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3		-3		-3	
SCH_Ec/Ior	dB	-9		-9		-9	
SCH_t_{offset}		0	5	0	5	0	5
OCNS_Ec/Ior	dB	-3,12		-3,12		-3,12	
Ioc	dBm / 7.68 MHz	-75.2	-75.2	-57.8	-54.7	-98.7	-98.7
Îor/Ioc	dB	5	5	7	3	3	3
Io, Note 1	dBm / 7.68 MHz	-69		-50		-94	
Propagation condition		AWGN		AWGN		AWGN	
NOTE 1: Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.							

A.9.3.10.1.2 Inter frequency test parameters

In this case both cells are on different frequencies. The SFN-CFN observed time difference accuracy requirements in the inter-frequency case are tested by using test parameters in Table A.9.36.

Table A.9.36: SFN-CFN observed time difference Inter frequency tests parameters

Parameter	Unit	Test 1		Test 2		Test 3	
		Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
DL timeslot number		0	2	0	2	0	2
UTRA RF Channel number		Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
PCCPCH_Ec/Ior	dB	-3		-3		-3	
SCH_Ec/Ior	dB	-9		-9		-9	
SCH_t_{offset}		0	5	0	5	0	5
OCNS_Ec/Ior	dB	-3,12		-3,12		-3,12	
Ioc	dBm / 7.68 MHz	-75.2	-75.2	-57.8	-54.7	-98.7	-98.7
Îor/Ioc	dB	5	5	7	3	3	3
Io, Note 1	dBm / 7.68 MHz	-69		-50		-94	
Propagation condition		AWGN		AWGN		AWGN	
NOTE 1: Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.							

A.9.3.10.2 Test Requirements

The SFN-CFN observed time difference measurement accuracy shall meet the requirements in section 9.1.1.10.

The rate of correct measurements observed during repeated tests shall be at least 90%.

A.9.3.11 UE transmitted power

NOTE: This section is included for consistency with numbering in section 9, currently no test covering requirements in sections 9.1.1.11 exists.

Annex B (informative): Change History

Table B.1: Change History

TSG	Doc	CR	R	Title	Cat	Curr	New	Work Item
RP-31				Release 7 created following decision at RAN #31		6.6.0	7.0.0	
RP-32	RP-060313	0363		Intra frequency mobility requirement during a MBMS session	B	7.0.0	7.1.0	MBMS-RAN-RF-TDD
RP-32	RP-060311	0364		7.68 Mcps Idle Mode Cell Selection & Reselection	B	7.0.0	7.1.0	VHCRTDD-RF
RP-32	RP-060311	0365		7.68 Mcps UTRAN Connected Mode Mobility	B	7.0.0	7.1.0	VHCRTDD-RF
RP-32	RP-060311	0366		7.68 Mcps RRC Connection Control & Timing Characteristics	B	7.0.0	7.1.0	VHCRTDD-RF
RP-32	RP-060311	0367		7.68 Mcps UE Measurement Procedures	B	7.0.0	7.1.0	VHCRTDD-RF
RP-32	RP-060311	0368		7.68 Mcps Measurements Performance Requirements	B	7.0.0	7.1.0	VHCRTDD-RF
RP-32	RP-060311	0369		7.68 Mcps Test Cases for RRM	B	7.0.0	7.1.0	VHCRTDD-RF
RP-32	RP-060313	0371		MBMS Reception during Inter-frequency Measurements (3.84 Mcps)	B	7.0.0	7.1.0	MBMS-RAN-RF-TDD
RP-32	RP-060314	0372		3.84 Mcps RX Timing Deviation range update	C	7.0.0	7.1.0	TEI7
RP-33	RP-060523	0374	1	Correction of GSM measurement test case for 1.28Mcps TDD	A	7.1.0	7.2.0	TEI6
RP-33	RP-060523	0376		Removal of square brackets from requirement for Event Triggering and Reporting Criteria CELL_FACH state	A	7.1.0	7.2.0	TEI6
RP-34	RP-060808	0378		Correction to A.8.4.1 for 1.28Mcps TDD	A	7.2.0	7.3.0	TEI4
RP-35	RP-070081	0380		Correction to UE measurement reporting requirements in Annex 8	A	7.3.0	7.4.0	TEI6
RP-36	RP-070376	0381		MBSFN Cluster Selection/Reselection	B	7.4.0	7.5.0	MBMSE-RANPhysTDD
RP-36	RP-070377	0382		Requirements for non-HSDPA and non-EDCH transmitter carrier power	B	7.4.0	7.5.0	LCRTDD-EDCH-RF
RP-37	RP-070733	0388	1	Introduction of multi-frequency operation for LCR TDD	F	7.5.0	7.6.0	TEI7
RP-37	RP-070652	0385		Correction to HS-SICH reception quality for 1.28Mcps TDD	A	7.5.0	7.6.0	TEI6
RP-37	RP-070651	0386		Inter-frequency measurement in MBMS for 7.68 Mcps TDD Option.	F	7.5.0	7.6.0	TEI7
RP-38	RP-070935	0389		Requirements for the UE transmission power headroom (UPH)	F	7.6.0	7.7.0	LCRTDD-EDCH-RF
RP-38	RP-070935	0390		MBSFN Cluster Selection/Reselection	B	7.6.0	7.7.0	MBMSE-RANPhysLCRTDD
RP-41	RP-080637	392		Updates of TS 25.123 to include UTRA TDD to E-UTRA mobility related requirements	F	7.7.0	8.0.0	LTE-RF
RP-42	RP-080902	400	1	Modification for P-CCPCH RSCP intra frequency relative requirement	A	8.0.0	8.1.0	TEI4
RP-42	RP-080903	405	1	Correction on Intra/Inter-frequency cell power level for UE to correctly evaluate a better ranked cell in idle state and power settings for related test cases	A	8.0.0	8.1.0	TEI4
RP-42	RP-080901	406		Modyfing the inter frequency monitoring ability of UE in TDD 1.28Mcps	A	8.0.0	8.1.0	TEI7
RP-42	RP-080946	408		Update of the reqirement for cell re-selection in enhanced CELL_FACH state in 1.28Mcps TDD	B	8.0.0	8.1.0	RANimp-EnhState1.28TDD
RP-42	RP-080944	395		Some clarifications on TD-SCDMA/E-UTRA interworking in CELL_FACH state	F	8.0.0	8.1.0	TEI8
RP-42	RP-080944	393		RRC re-establishment requirements	F	8.0.0	8.1.0	TEI8
RP-42	RP-080938	394	3	Correction of UTRAN TDD to E-UTRAN TDD mobility requirements	F	8.0.0	8.1.0	LTE-RF

History

Document history		
V8.1.0	January 2009	Publication